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User's Guide for POSTZ
A Post-Processor for the
SHORTZ Air Quality Model

TRC Environmental Consultants, Inc.
Mill Creek, WA

Prepared for

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A Post-Processor for the SHORTZ Air Quality Model

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This report provides instructions for the use of the POSTZ computer program, a post-processor for the SHORTZ air quality model. The POSTZ program is designed to read a sequential output tape of concentrations produced by the SHORTZ model. The POSTZ program provides summary tables of the highest concentrations for different averaging times. The POSTZ program allows the user to restrict the analysis to specific receptors, sources or periods of meteorological data. In addition, the user can scale the concentrations from a particular source if desired. The user can select between running or block averages, and can implement the EPA calms policy if desired. The output tables can be in the form of the highest five concentrations for each receptor, the top 50 concentrations for all receptors, or all concentrations computed to be above a user specified criteria value.

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1.0 INTRODUCTION

1.1 General

The POSTZ computer program is a post-processor for the SHORTZ computer program. The SHORTZ air quality model is designed with the capability for producing a sequential tape output of hourly concentrations at each receptor for each source. The SHORTZ program can use this tape to "re-do" a particular run, with a few changes. Essentially, the program saves the time of repeating all the analyses by reading the results of a previous analysis, and only making changes where requested by the user, such as adding a new source. However, it is also possible to use this sequential tape to do other analyses, such as:

- printing summary tables of concentrations for different averaging times,
- restricting the analysis to certain receptors or to a shorter portion of the meteorological data base than the original SHORTZ run,
- restricting the analysis to certain sources, or scaling the contribution from particular sources,
- specifying separate background concentrations for individual receptors,
- changing the manner of computation for averages from block averages to running averages, and
- implementing the EPA calms policy.

Until now, no computer program was available to read the SHORTZ output tape and conduct these analyses. The POSTZ program is specifically designed to provide this capability.

This user's guide has been organized into 3 major sections, including this introduction. In the introduction, information is provided on the SHORTZ Model and the necessary information which must be provided to the SHORTZ Model to prepare the output tape for the POSTZ program. In Chapter 2.0, specific user instructions for the POSTZ program are provided. In Chapter 3.0 sample input and output streams are provided. Appendix A has been included which presents the entire FORTRAN listing for the POSTZ program.

1.2 About SHORTZ

The SHORTZ air quality model was developed by the H. E. Cramer Company. The program and it capabilities are discussed in detail in the "User's Instructions for the SHORTZ and LONGZ Computer Programs, Volumes I and II", EPA Document Numbers EPA-903/9-82-004a and b. The SHORTZ program was written specifically to run on the Sperry/UNIVAC computer. The program in the form on the UNIVAC, is not transportable to other computer systems, since it requires two specific UNIVAC assembly language routines to operate. The routines allow the program to define dynamic mass storage on the fixed disk system. The information written to mass storage is not saved by the system, but rather used only in the operation of the computer program and deleted after a successful run.

In addition to the mass storage, the user can elect to write output to a magnetic tape. The magnetic tape output is very comprehensive, and includes essentially all the detailed information of the sources, receptors and model parameters, including specification of all the input parameters for the SHORTZ run. The program also writes to tape a sequential listing of all the concentrations computed for each hour, including the concentrations by each source for each receptor for each hour.

The POSTZ Model was originally developed on a micro computer with a Microsoft Disk Operating System (MS-DOS). One of the early steps in the POSTZ program development was the creation of an MS-DOS version of the SHORTZ computer program. The program generally uses the same FORTRAN code as the UNIVAC version with several distinct differences. The mass storage subroutines used by SHORTZ on the UNIVAC were replaced by dynamic file opening control used by the MS-DOS FORTRAN. The mass storage is performed on the default disk drive for the system. Another major change to the program from the UNIVAC version concerns the tape input and output routine. The MS-DOS version of the program writes an output file very similar in format to the output tape written by the UNIVAC version, but the output media is the default disk drive, rather than a tape unit. This necessitated major changes to the output handling routine of the SHORTZ program. Also the capability to read input from tapes was not germane to the POSTZ program development and was not included in the capabilites of the MS-DOS version of SHORTZ. There were a number of other minor and cosmetic changes to the SHORTZ program from the UNIVAC version to the MS-DOS version.

The MS-DOS version uses roughly 234 kilobytes of memory on an IBM-PC, IBM-AT or compatible computer system. Each word consists of 16 bits on the IBM-PC and compatible computers as

compared to the UNIVAC where each word consists of 36 bits.

1.3 Running SHORTZ to Create an Output Tape for POSTZ

The instructions for running the SHORTZ Model are well described in the User's Instructions. To write an output tape, a value of 2 or 3 must be given for the parameter KSW (column 1, Card 1). For the MS-DOS version, only a value of 2 can be used, since there is no capability for tape input with the MS-DOS version of the program.

For the UNIVAC version, there are additions required in the Executive Control Language (ECL) statements which appear at the start of the program. Unless directed otherwise, the program writes the tape output to unit 3. The following statements must appear in the ECL:

```
@ASG,options output-tape-file.,type,reel-number
@USE 3,output-tape-file
```

The options are described in the User's Instructions for the SHORTZ program. They concern the nature of the tape, whether it is a temporary tape, a high density tape, an unlabeled tape, etc. Since writing will occur, it is always necessary to include a /W in the option list. Perhaps the most common use is an internal tape with a reel number assigned by the NCC. The options should then be F/W. The F option allows the tape to be written even if a label has been previously written to the tape, but the user does not know the label, or cannot remember the label. It requires only that the user remember the reel-number, and of course that the user's identification number be authorized to write to the tape. The output tape file is a name given by the user for the output file to be written. An example would be SHZOUT.RUN1. The type specifies the density of the tape. Most tapes are 1600 or 6250 bits per inch and the specification here should be T. The reel-number identifies the tape within the NCC system and is assigned by the tape librarian when the user calls and requests a tape.

The value of 3 in the USE statement above indicates that the output is to be written to unit 3, the default. It should be noted that the user should change this if internal specifications in the input stream for the model have changed the output unit number.

The output files for the SHORTZ Model, depending on the length of the meteorological data base, can be quite long. It is possible to write a tape file that is longer than will fit on a typical tape. The SHORTZ Model has the capability to write more than one tape, but this capability has not been put into the POSTZ program. The user should ensure that the SHORTZ run is restricted enough so that more than one tape is not

written. The SHORTZ User's Instructions provide discussions concerning the output length for tapes. This will typically not be a problem for most runs of either program. Given the possibility for long output, a tape should be dedicated to the SHORTZ output. However, it is possible to write the output to a single file within a tape, using the MOVE statement. The format for this statement is:

```
@MOVE output-tape-file.,n
```

In this above statement, the value of n is the number of end of file marks to skip on the tape to which the output is to be written. A similar statement is needed in the ECL for the POSTZ model which will read the tape (discussed later). For more information on running SHORTZ on the UNIVAC computer, consult the User's Instructions.

The MS-DOS version of the SHORTZ Model is much simpler to run. An executable version of the program is generally obtained on a floppy diskette, and called SHORTZ.EXE. The program can be executed by typing d:SHORTZ where d is the disk drive where the SHORTZ model is currently located. The user should be logged into the drive where the input files are located. The program will prompt for the name of the card input file name, which is an ASCII disk file in exactly the same format as the card-image input file for the UNIVAC version. It is suggested that the user create the input file with a screen or line editor program. The SHORTZ program will also prompt for an output file name where the printed output is to be written. Finally, the SHORTZ program will prompt for the tape output file name. After completion of the SHORTZ run, the output can be copied to the line printer by the command COPY outputfilename LPT1:. Do not attempt this with the tape output file since the tape output is not in ASCII, but rather in unformatted form. No job control statements are required in the input stream for the MS-DOS version of the SHORTZ program.

Whether running on the UNIVAC, or on a micro-computer, once the SHORTZ output tape (or file) is created, the user is ready to run POSTZ. The following chapter discusses the preparation of inputs for the POSTZ program.

2.0 POSTZ USER INSTRUCTIONS

2.1 Program Options

The POSTZ computer program is designed to analyze an output tape from the SHORTZ air quality model. The SHORTZ program should be run first. Some guidance is given in Chapter 1.0 on the running of SHORTZ, but the user is encouraged to refer to the SHORTZ User's Instructions ("User's Instructions for the SHORTZ and LONGZ Computer Programs, Volumes I and II", EPA Document Numbers EPA-903/9-82-004a and b).

2.1.1 Output Tables

The POSTZ program's major function is to produce a series of output tables. There are three separate output tables that can be produced by the POSTZ program. Each of these tables is described as follows:

- High-5 Table. The POSTZ program produces a table of the highest five concentration estimates at each receptor. For example, if the model has been instructed to compute 3-hour average concentrations (see Section 2.1.2 for a discussion of averaging time options) for a full year of hourly concentration data produced by SHORTZ, the POSTZ program will use the hourly concentrations produced by SHORTZ to compute 3-hour averages for every 3-hour period in the year (see Section 2.1.3 concerning option of running versus block averages). The POSTZ program will also sort all these 3-hour averages to determine the five highest values at each receptor location. When printing the results, the model also prints the ending hour and day for each concentration printed.

- Top-50 Table. The POSTZ program sorts all the computed average concentrations (for a particular averaging time) to determine the highest 50 values regardless of receptor. The program prints the ending hour, day and the receptor coordinates for each concentration printed.

- Exceedance Table. The POSTZ program sorts and records all values above a user specified criteria value. For example, the user may

desire to print out all 24-hour average concentrations above 37 micrograms per cubic meter (24-hour PSD Increment for TSP). A maximum of 100 values may be printed in this table. The values are sorted in order of concentration, very similar to the Top-50 table. The POSTZ program also prints the ending hour, day and receptor coordinates for each concentration printed.

2.1.2 Averaging Times

The user can request the POSTZ program to print any one, any two or all three of the above tables for each of 6 separate averaging times. The averaging times are:

- one-hour average concentrations,
- three-hour average concentrations,
- eight-hour average concentrations,
- 24-hour average concentrations,
- annual-average concentrations (in reality, this option is for any long-term average, since the number of days per year is an input specified by the user, thus if 30 day averages are required, the user can specify that there are 30 days per year), and
- an additional averaging time to be specified by the user. The length of this averaging time may be any value from one hour to 24 hours.

The switches at the start of the program enable or disable any of the above tables.

2.1.3 Calms Policy

The POSTZ program can be requested to implement the EPA calms policy when computing averages. If the calms policy is requested, when values of wind speed are less than 1.0 meters per second, the program considers the concentrations as invalid and averages on the basis of the other concentrations within the time period. A full discussion of the calms policy as it is implemented in the POSTZ program is contained in the Guideline on Air Quality Models, (EPA-450/2-78-027R). It should be noted that the use of the calms policy is an option of the POSTZ program, and is entirely at the discretion of the user.

2.1.4 Running or Block Averages

The user can specify whether running or block averages are to be computed. Running averages mean that the average is computed every hour for the previous n hours where n is the averaging time selected. For example, if there are 24 hours in the data base and running 3-hour average concentrations are to be computed, the first period will cover hours 1 through 3, while the second period will cover hours 2 through 4. Twenty-two different but overlapping 3-hour averages will be calculated from the 24-hour data base.

Block averages mean that the individual averaging periods do not overlap. For example, in the above case if block averages were to be computed rather than running averages, the first period would include hours 1 through 3 while the second period would include hours 4 through 6. Eight non-overlapping 3-hour averages will be calculated from the 24-hour data base.

The POSTZ program requires that all averaging times are controlled by the same switch for running or block averages, so that it is not possible in the same run to compute running averages for 3-hour concentrations and block averages for 24-hour concentrations. The one exception to the above rule is for annual averages. Annual averages (or any averaging period chosen to be processed as an annual average) must be computed with block averages. Even if running averages are used for the remainder of the averaging times, block averages will be automatically used for the annual averages.

2.1.5 Restricting Time Limits

The POSTZ program allows the user to select a specific portion of the sequential data tape for analysis. Thus, if a SHORTZ run was made for a full year and a sequential concentration tape subjected to POSTZ analysis, the user may restrict the POSTZ analysis and all the tables produced in the analysis to a smaller period of time than the full year. For example, a POSTZ analysis might be run for just the summer months. The user restricts the period of time by providing to the program a start date and time for the analysis to begin, and ending date and time for the program to stop.

2.1.6 Restrict Receptors

Similar to the above analysis, the user may restrict the POSTZ analysis to consider only a portion of the receptor network for the SHORTZ run. Both grid and discrete receptors may be selected for analysis. The default condition for the program is to assume all receptors are to be included. An initial switch tells the program that receptor restriction will be used, and the program then assumes all receptors are to be

excluded. One by one, then, the user instructs the program which receptors are to be included.

2.1.7 Restrict Sources

Similar to the receptor restriction, it is possible for the program to exclude the concentrations from certain sources. The program initially begins by assuming all sources are to be included. Once the user tells the program (through a switch) that source restriction is to be performed, the program then assumes that all sources are to be excluded, until the user selects, one by one, the sources to be included in the analysis.

2.1.8 Specify Background

The user can add a background concentration to each receptor. The program allows a "blanket" value of the background to be assigned to all receptors, as well as a specific format for separate background concentrations for each receptor.

2.1.9 Scale Concentrations

The concentrations resulting from specific sources can be scaled. The individual source is identified and a scaling factor is used for the contribution to the concentrations computed by SHORTZ for that source.

2.2 Model Parameters and Definitions

In this section the major model parameters are discussed. Specifically, the model parameters are defined, and the format for the input file is presented in the next section. Following are descriptions of the input parameters:

PTITLE — This is a run title for the POSTZ run. It is not the same as the run title for the SHORTZ run. POSTZ prints both the run title for the SHORTZ run and PTITLE on the first page of the POSTZ output. The title may be used for record keeping or to label the output.

ISW — A total of 25 separate switches are included in the array ISW(25). They assume values of 0, 1 or 2 depending on the switch and desires of the user. In general a value of 0 is used to decline a particular option (leaving the space blank also declines the option). Placing a 1 or 2 in the switch selects the option and often requires subsequent cards containing more information which would be left out if the switch were not selected. The first 5 switches

control the various program options. ISW(1) specifies whether the time period for the analysis is to be restricted to particular hours or days. If this option is selected, the user is required to provide information later in the runstream which tells the program how to restrict the time period. ISW(2) determines if the analysis is to be restricted to certain receptors. If the switch is selected, the user is required to provide information on which receptors to restrict the analysis to on a later card. ISW(3) determines if the analysis is to be restricted to certain sources. If selected the user must provide a list of the sources to include later in the runstream. ISW(4) specifies that background concentrations are to be added to receptors. Depending on whether the value for the switch is 1 or 2 the user may add a uniform background to all receptors, or he may specify a specific background for each receptor. ISW(5) determines if concentrations from certain sources are to be scaled. If selected the user must provide information later in the runstream. Switches 6 through 23 select the various output tables to be prepared. In general, the switches are grouped in threes for each averaging time. Thus switches 6-8 refer to 1-hour averages, switches 9-11 refer to 3-hour averages, switches 12-14 refer to 8-hour averages, switches 15-17 refer to 24-hour averages, switches 18-20 refer to annual averages, and switches 21-23 refer to the user specified averaging time. Each group of three switches determines whether a high-5, top-50 or exceedance table are to be prepared. If the any of the switches pertaining to the user specified averaging time are selected (switches 21-23) the user is required to provide information on the averaging time desired later in the runstream. ISW(24) determines whether running or block averages are to be computed for all averaging times except annual (annual averages are always block averages). If the switch is 0, block averages are used, if the value is 1 running averages are used. Finally, ISW(25) determines whether the EPA calms policy is to be implemented or not. If the switch is 0, the calms policy is not implemented, if the value is 1 then the calms policy is implemented.

JULST — One item of information not passed to the tape from the SHORTZ program is the Julian day number of the start of the meteorological record.

Therefore, the user is required on all runs to specify the Julian day number for the start of the sequential analysis. JULST is the day number (from 1 to 366) for the start of the meteorological data that was used in the SHORTZ run to create the tape being analyzed by the current run of POSTZ.

IYR — Like JULST, IYR is the year for the start of the meteorological data. The year numbers can be provided using values four digits long, such as 1986 or it can be provided using values with two digits, such as 86, as long as the user is consistent in all date information, using the same format for all dates provided to the POSTZ program.

IDYST — If the user elects to restrict the analysis to certain days, he specifies the day the analysis is to start on with IDYST. If IDYST is less than JULST, IDYST is set equal to JULST (unless IYRST is greater than IYR).

IYRST — If the user elects to restrict the analysis to certain days, he specifies the year the analysis is to start in with IYRST. If IYRST is less than IYR, IYRST is set equal to IYR.

IDYEND — If the user elects to restrict the analysis to certain days, IDYEND is used to specify the last day for the analysis. If IDYEND is selected so that the ending day is beyond the end of the sequential tape, IDYEND is reset to reflect the end of the tape.

IYREND — If the user elects to restrict the analysis to certain days, IYREND is used to specify the year in which the last day of the analysis occurs. If IYREND is selected so that the ending day is beyond the end of the sequential tape, IYREND is reset to reflect the end of the tape.

NXINCL — If the user elects to restrict the analysis to certain receptors, the parameter NXINCL is used to indicate the number of X grid points which will be included in the analysis. The SHORTZ program allows the specification of two types of receptors: grid receptors and discrete receptors. This parameter concerns only the grid receptors and specifies the number of X grid points which will be included in the analysis. If there are only discrete receptors

in this run, NXINCL should be set to 0.

NYINCL — If the user elects to restrict the analysis to certain receptors, the parameter NYINCL is used to indicate the number of Y grid points which will be included in the analysis (see note under NXINCL concerning type of receptors). If the value of NXINCL is set to 0, there are no grid points, and NYINCL is not read.

XX — The X-grid values to include in the analysis if the analysis is to be restricted to certain receptors. It is important to note that these X-grid values must have been in the original SHORTZ run. NXINCL values of XX are read.

YY — The Y-grid values to include in the analysis if the analysis is to be restricted to certain receptors. It is important to note that these Y-grid values must have been in the original SHORTZ run. NYINCL values of YY are read.

NXYINC — If the user elects to restrict the analysis to certain receptors, the parameter NXYINC indicates the number of discrete receptors to include in the analysis (see note under NXINCL concerning the type of receptors). If there are no discrete receptors, this value should be set to 0.

XDISCR — If the user elects to restrict the analysis to certain receptors, the individual X coordinate values for the discrete receptors to include in the run are stored in XDISCR. It is important to note that the discrete receptors specified here must have been in the original SHORTZ run. NXYINC values of xdiscr are read.

YDISCR — If the user elects to restrict the analysis to certain receptors, the individual Y coordinate values for the discrete receptors to include in the run are stored in YDISCR. It is important to note that the discrete receptors specified here must have been in the original SHORTZ run. NXYINC are read.

NSELIM — Contrary to the implied name of this parameter, it is used to specify the number of sources to include in the run if the user elects to restrict the analysis to certain sources.

K — If the user elects to restrict the analysis to

	certain sources, the individual source identification numbers as specified in the original SHORTZ run are stored in K. NSELIM values of K are read.
BACK	If the user elects to assign a uniform background concentration to all the receptors, the value is stored in BACK.
NUMDIS	If the user elects to specify a different background concentration for specific receptors, the number of receptors to be specified in this manner is entered in NUMDIS.
X1	If the user elects to specify a different background concentration for specific receptors, the values are input into the program by first identifying the receptor by coordinates, and then specifying the value to use for background at that receptor. The receptor coordinates must have been in the original SHORTZ run. X1 is used to specify the X-coordinate value for background identification. NUMDIS values of X1 are read.
Y1	If the user elects to specify a different background for specific receptors, (see note under X1 above) Y1 is used to specify the Y-coordinate value for background identification. NUMDIS values of Y1 are read.
VAL	If the user elects to specify a different background concentration for specific receptors, the value to be used at a specific receptor whose coordinates have been identified by X1 and Y1 is stored in VAL.
NSCALE	If the user elects to scale the concentrations for a specific source, the number of sources to scale in this manner is specified by NSCALE.
ISCALE	If the user elects to scale the concentrations for a particular source, the individual source identification number as stated in the original SHORTZ run is specified in ISCALE. NSCALE values of ISCALE are read.
SCALE	If the user elects to scale the concentrations for a particular source, the scaling value is specified by SCALE. To double the concentrations from a particular source, the value of SCALE would be set to 2. NSCALE values

of SCALE are read.

NDYYR — If annual concentrations are to be computed (as determined by the setting to a value of 1 for any of the switches ISW(18), ISW(19) or ISW(20)), the number of days to be considered one year are specified by NDYYR. It should be noted that if the user desires to compute an average of less than one year, but greater than one day (e.g. 30-day average), the NDYYR value may be set to any number desired. There is no requirement that the "annual" concentrations actually be one year averages. There is a requirement, however, that any averages computed using the annual options must be block averages.

IOTHER — If the user desires to specify an averaging time other than the ones established, the value of IOTHER allow the specification of the number of hours for a different average. The restrictions are that the value must be at least one hour, and that the value cannot be greater than 24 hours.

ONEEX — If the user elects to print out exceedance tables, the criteria for the exceedance of one-hour average concentrations is specified in ONEEX.

THREX — If the user elects to print out exceedance tables, the criteria for the exceedance of three-hour average concentrations is specified in THREX.

EIGEX — If the user elects to print out exceedance tables, the criteria for the exceedance of eight-hour average concentrations is specified in EIGEX.

TWYEX — If the user elects to print out exceedance tables, the criteria for the exceedance of 24-hour average concentrations is specified in TWYEX.

ANNEX — If the user elects to print out exceedance tables, the criteria for the exceedance of annual average concentrations is specified in ANNEX.

OTHEX — If the user elects to print out exceedance tables, the criteria for the exceedance for the user specified averaging time period is

specified in OTHEX.

2.3 Format for the Input File

The POSTZ program requires two types of input. The first is the SHORTZ output tape, which has been discussed in Section 1.0. The second type of input is the specification of all the parameters listed in Section 2.2. The format for input of these parameters is an ASCII "card-image" file. In actuality, very little processing is currently done with cards. However, the format for the input to all computer models is usually based on the concept of 80-column records, simulating card input. The records are typically stored in a disk file. For the UNIVAC version of the model, the card-image input file may be stored in a different file than the Executive Control Language (ECL) command file which controls the POSTZ run, or they may be placed between the ECL statements at the proper location. In Section 2.4, the format for the ECL to use with the POSTZ Model is discussed. Here the format for the card-image input file is presented in Table 2-1. The MS-DOS version of the computer program is much simpler to use. The card-image input file is located in a disk file with no control statements. When the program is initiated by the command POSTZ, the program prompts the user for the name of the input file. Other prompts are for the name of the SHORTZ output file, and for the name of a file to store the output from the POSTZ run.

2.4 Executive Control Language (ECL) for the POSTZ Program

To run the POSTZ Model on the UNIVAC computer it is necessary to create a batch input command file, instructing the UNIVAC as to the location of the input files, the location of the program to be executed (POSTZ) and the destination for any output. The assumption has been made here that the user is familiar with the UNIVAC operating system, and can create the input streams with an editor program, or alternatively to create them off-line on a micro-computer and "upload" the input stream to the UNIVAC. The command file must contain certain Executive Control language (ECL) statements for the POSTZ program to work. The statements and the order they should appear are discussed as follows:

```
@RUN,priority jobid/95,acctnum/userid, projectid/uid,time
```

where priority is the run priority, jobid is a six character name for the run, acctnum is the user's account number, userid is the user identification code, projectid is the project identification code, uid is the ADP identifier and time is the maximum runtime in minutes.

Table 2-1

User's Instructions for Creating the Card Image Input File

Card Group	Card No.	Parameter	Format	Description
1	1	PTITLE	A80	Run title for the POSTZ run, different from the run title for the SHORTZ run used to create the output tape
2	1	ISW(1)	25I2 (col 2)	Switch to determine if time period of analysis is to be restricted. If =0, use entire time period on the output tape from the SHORTZ run. If =1, include Card Group 4 to specify time period restriction
		ISW(2)	(col 4)	Switch to determine if analysis is to be restricted to certain receptors. If =0, all receptors will be included in the POSTZ run. If =1, restrict analysis only to those receptors specified in Card Group 5.
		ISW(3)	(col 6)	Switch to determine if the analysis is to be restricted to only certain sources. If =0, all sources will be included. If =1, restrict analysis to only those sources specified in Card Group 6.
		ISW(4)	(col 8)	Switch to determine if background concentrations are to be added to the SHORTZ Model results. If =0, no background concentrations are included; if =1, uniform background is to be added to all receptors as specified in Card Group 7; if =2, separate

Table 2-1 (continued)

User's Instructions for Creating the Card Image Input File

Card Group	Card No.	Parameter	Format	Description
				background is to be added to each receptor as specified in Card Group 7.
		ISW(5)	(col 10)	Switch to determine if contributions from particular sources are to be scaled. If =0, no source scaling is done; if =1, scaling will be performed for sources and values specified in Card Group 8.
		ISW(6)	(col 12)	Switch to determine if a high-5 output table is to be prepared for 1-hour average concentrations. If =0, no high-5 table for 1-hour concentrations. If =1, prepare a high-5 table by receptor for 1 hour average concentrations.
		ISW(7)	(col 14)	Switch to determine if a Top-50 table is to be prepared for 1-hour average concentrations. If =0, no top-50 table for 1-hour concentrations. If =1, prepare a top-50 table for 1-hour average concentrations.
		ISW(8)	(col 16)	Switch to determine if an exceedance table is to be prepared for 1-hour average concentrations. If =0, no exceedance table for 1-hour concentrations. If =1, prepare an exceedance table for 1-hour average concentrations. Exceedance

Table 2-1 (continued)

User's Instructions for Creating the Card Image Input File

Card Group	Card No.	Parameter	Format	Description
				value is specified in Card Group 11 (ONEEX).
		ISW(9)	(col 18)	Switch to determine if a high-5 output table is to be prepared for 3-hour average concentrations. If =0, no high-5 table for 3-hour concentrations. If =1, prepare a high-5 table by receptor for 3 hour average concentrations.
		ISW(10)	(col 20)	Switch to determine if a Top-50 table is to be prepared for 3-hour average concentrations. If =0, no top-50 table for 3-hour concentrations. If =1, prepare a top-50 table for 3-hour average concentrations.
		ISW(11)	(col 22)	Switch to determine if an exceedance table is to be prepared for 3-hour average concentrations. If =0, no exceedance table for 3-hour concentrations. If =1, prepare an exceedance table for 3-hour average concentrations. Exceedance value is specified in Card Group 11 (THREX).
		ISW(12)	(col 24)	Switch to determine if a high-5 output table is to be prepared for 8-hour average concentrations. If =0, no high-5 table for 8-hour concentrations. If =1, prepare a high-5 table by

Table 2-1 (continued)

User's Instructions for Creating the Card Image Input File

Card Group	Card No.	Parameter	Format	Description
				receptor for 8 hour average concentrations.
		ISW(13)	(col 26)	Switch to determine if a Top-50 table is to be prepared for 8-hour average concentrations. If =0, no top-50 table for 8-hour concentrations. If =1, prepare a top-50 table for 8-hour average concentrations.
		ISW(14)	(col 28)	Switch to determine if an exceedance table is to be prepared for 8-hour average concentrations. If =0, no exceedance table for 8-hour concentrations. If =1, prepare an exceedance table for 8-hour average concentrations. Exceedance value specified in Card Group 11 (EIGEX).
		ISW(15)	(col 30)	Switch to determine if a high-5 output table is to be prepared for 24-hour average concentrations. If =0, no high-5 table for 24-hour concentrations. If =1, prepare a high-5 table by receptor for 24 hour average concentrations.
		ISW(16)	(col 32)	Switch to determine if a Top-50 table is to be prepared for 24-hour average concentrations. If =0, no top-50 table for 24-hour concentrations. If =1, prepare a top-50 table for

Table 2-1 (continued)

User's Instructions for Creating the Card Image Input File

Card Group	Card No.	Parameter	Format	Description
				24-hour average concentrations.
		ISW(17)	(col 34)	Switch to determine if an exceedance table is to be prepared for 24-hour average concentrations. If =0, no exceedance table for 24-hour concentrations. If =1, prepare an exceedance table for 24-hour average concentrations. Exceedance value specified in Card Group 11 (TWYEX).
		ISW(18)	(col 36)	Switch to determine if a high-5 output table is to be prepared for annual average concentrations. If =0, no high-5 table for annual concentrations. If =1, prepare a high-5 table by receptor for annual average concentrations. Must input the number of days per year in Card Group 9.
		ISW(19)	(col 38)	Switch to determine if a Top-50 table is to be prepared for annual average concentrations. If =0, no top-50 table for annual concentrations. If =1, prepare a top-50 table for annual average concentrations.
		ISW(20)	(col 40)	Switch to determine if an exceedance table is to be prepared for annual average concentrations. If =0, no exceedance table for annual

Table 2-1 (continued)

User's Instructions for Creating the Card Image Input File

Card Group	Card No.	Parameter	Format	Description
				concentrations. If =1, prepare an exceedance table for annual average concentrations. Exceedance value specified in Card Group 11 (ANNEX).
		ISW(21)	(col 42)	Switch to determine if a high-5 output table is to be prepared for user specified average concentrations. If =0, no high-5 table for user specified concentrations. If =1, prepare a high-5 table by receptor for user specified average concentrations.
		ISW(22)	(col 44)	Switch to determine if a Top-50 table is to be prepared for user specified average concentrations. If =0, no top-50 table for user specified concentrations. If =1, prepare a top-50 table for user specified average concentrations.
		ISW(23)	(col 46)	Switch to determine if an exceedance table is to be prepared for user specified average concentrations. If =0, no exceedance table for user specified concentrations. If =1, prepare an exceedance table for user specified average concentrations. Exceedance value specified in Card Group 11 (OTHEX).
		ISW(24)	(col 48)	Switch to determine whether

Table 2-1 (continued)

User's Instructions for Creating the Card Image Input File

Card Group	Card No.	Parameter	Format	Description
				block averages or running averages are computed in all analyses. If =0, then block averages are computed. If =1, then running averages are computed.
		ISW(25)	(col 50)	Switch to determine if EPA calms policy is to be implemented. If =0, the calms policy is not implemented, if =1, the calms policy is implemented.
3	1	JULST	I5	Julian day for the start of the data on the tape from the SHORTZ run.
		IYR	I5	Year for the start of the data on the tape from the SHORTZ run. It can either be of the form 1986 or of the form 86 -- the program will use either.
4	1	[This card is only read if ISW(1)=1]		
		IDYST	I5	The Julian day for the start of the analysis.
		IYRST	I5	The year for the start of the analysis.
		IDYEND	I5	The Julian Day for the end of the analysis.
		IYREND	I5	The year for the end of the analysis.
5	[This card group is only read if ISW(2)=1]			
	1	NXINCL	I5	The number of X grid points to included in the analysis.

Table 2-1 (continued)

User's Instructions for Creating the Card Image Input File

Card Group	Card No.	Parameter	Format	Description
	2	[This card is not read if NXINCL=0] [This card can be repeated as often as necessary to include all the X grid points]		
		XX	8F10.0	The X grid points to include in the analysis. Note, each X value to be used must be specified here. It is not possible to specify the starting x value and the increment for other values as it is in SHORTZ.
	3	[This card is not read if NXINCL=0]		
		NYINCL	8F10.0	The number of Y grid points to include in the analysis.
	4	[This card is not read if NXINCL=0] [This card can be repeated as often as necessary to include all the Y grid points]		
		YY	8F10.0	The Y grid points to be included in the analysis. (See note on format for X grid points above).
	5	NXYINC	I5	The number of discrete receptors to include in the analysis.
	6	[This card is not read if NXYINC=0] [This card can be repeated as often as necessary to include all the discrete receptors]		
		XDISCR	8F10.0	The x values for the discrete receptors.
	7	[This card is not read if NXYINC=0] [This card can be repeated as often as necessary to include all the discrete receptors]		
		YDISCR	8F10.0	The y values for the discrete receptors.
6	[This card group is only read if ISW(3)=1]			
	1	NSELIM	I5	The number of sources to

Table 2-1 (continued)

User's Instructions for Creating the Card Image Input File

Card Group	Card No.	Parameter	Format	Description
				include in the run
	2	[This card is repeated NSELIM times]		
		K	I5	The source identification number of the source to be included in the run.
7	[This card group is not read if ISW(4)=0]			
	If ISW(4)=1 the following format applies			
	1	BACK	F10.0	The uniform background concentration to apply to all receptors.
	If ISW(4)=2 the following format applies			
	1	NUMDIS	I5	The number of receptors for which a background value is to be specified
	2	[This card is repeated NUMDIS times]		
		X1	F10.0	The x-coordinate of the receptor for background specification
		Y1	F10.0	The y-coordinate of the receptor for background specification
		VAL	F10.0	The background concentration to use for the identified receptor.
8	[This card group is not read if ISW(5)=0]			
	1	NSCALE	I5	The number of sources to scale
	2	[This card is repeated NSCALE times]		
		ISCALE	I5	The source identification number of the source to be scaled.
		SCALE	F10.0	The scaling value

Table 2-1 (continued)

User's Instructions for Creating the Card Image Input File

Card Group	Card No.	Parameter	Format	Description
9	[This card group is only read if ISW(18), ISW(19) or ISW(20) =1]			
	1	NDYYR	I5	The number of days per year. (Note this value can be any desired number less than 366. For example, if the user desired a 30 day average value, the annual can be set to 30 days with this card.)
10	[This card group is only read if ISW(21), ISW(22) or ISW(23) =1]			
	1	IOTHER	I5	The averaging time to be specified by the user. (Number of hours)
11	1	[This card is not read if ISW(8)=0]		
		ONEEX	F10.0	The exceedance value for 1-hour concentrations
	2	[This card is not read if ISW(11)=0]		
		THREX	F10.0	The exceedance value for 3-hour concentrations
	3	[This card is not read if ISW(14)=0]		
		EIGEX	F10.0	The exceedance value for 8-hour concentrations
	4	[This card is not read if ISW(17)=0]		
		TWYEX	F10.0	The exceedance value for 24-hour concentrations
	5	[This card is not read if ISW(20)=0]		
		ANNEX	F10.0	The exceedance value for annual concentrations
	6	[This card is not read if ISW(23)=0]		
		OTHEX	F10.0	The exceedance value for user specified average concentrations

```
@CAT,P print-file(+1).
```

where print-file is a name specified for the output destination. This is an optional card which allows the output from the POSTZ run to be stored in a file on the disk for later access with an editor program. This structure is ideal for remote batch jobs.

```
@BRKPT PRINT$,print-file
```

This card is only included if the @CAT card is included. It redirects the output for the run to the file named in the @CAT command.

```
@ASG/options output-tape-file.,type,reel-number
@USE 2,output-tape-file
```

These two cards specify the SHORTZ output tape. The parameter output-tape-file is a name used for the purposes of this run to identify the file on the tape used for input to the POSTZ run. The values of type and reel-number are the same as for the SHORTZ run which created the tape (see Chapter 1.0). As with the SHORTZ run, it is possible to use a specific file on a tape, rather than the entire tape as the above command would imply. If a specific file on the tape is to be read, the additional command shown below is needed:

```
@MOVE output-tape-file.,n
```

where n is the number of end-of-file marks to skip on the tape of the output file from the SHORTZ run.

```
@ASG,A program-file.
```

This card locates the program file and assigns it to the run. The actual name for the program file will be determined by the user and the system he is working on. To inquire regarding the means to obtain a copy of POSTZ or the proper program file name if using the National Computer Center, the user should contact the nearest regional office of EPA.

```
@ASG,A card-input-file.
```

This card is optional, depending on whether the card-image input file is included in the command runstream, or in a separate file. If in a separate file, the above command must be included, and card-input-file is the specification of the filename for the card-image input file.

```
@XQT program-file.ABS
```

This card actually begins execution of the program. The ABS

element for the file containing the program is assumed to be the relocatable (executable) program produced by the FORTRAN complier. The user may have this file named differently than is assumed above. If the input data is located in a file, then the following statement is required:

```
@ADD card-input-file.
```

If the cards are to be included in the command runstream, the previous statement must not be included and the cards themselves occur here in the runstream in the order and format indicated in Table 2-1.

```
@BRKPT PRINT$
@FREE print-file.
```

These cards are only included if the output has been redirected to a print file defined by the previous @CAT statement.

```
@FIN
```

This card terminates the run.

2.5 M-S DOS Operation of POSTZ

The MS-DOS version of the program is generally obtained on a floppy diskette. The program uses over 330 kilobytes of memory and is called POSTZ.EXE. Execution of the MS-DOS version of the program is accomplished by typing:

```
d:POSTZ
```

where d is the drive designator for the location of the program. The program will prompt the user for the name of the card-image input file (Table 2-1) and the SHORTZ output tape file. It will also ask for a new disk file name to be given to the output from the POSTZ program. The POSTZ program informs the user on the progress of the run by advising on the day and hour of data currently being processed. At the completion of the POSTZ run, the user can transfer the output to the line printer by typing COPY output-filename LPT1:.

3.0 SAMPLE INPUT AND OUTPUT FILES

Sample input and output files have been taken from the User's Instructions for the SHORTZ Model. Essentially the same input file used in the test case for the SHORTZ Model has been used here, with two exceptions: the output tables from the test SHORTZ run are quite voluminous and not germane to the POSTZ development, so the control options have been shut off for the output, and the output tape selection has been made by setting KSW to 2 in Column 1 of Card 1. The input file from the SHORTZ run is included as Figure 3-1. The output file from the SHORTZ run has been included as Figure 3-2.

The POSTZ test run uses the output tape written by the SHORTZ program for the test case above as an input. The card-image input stream is depicted in Figure 3-3. The output file from the POSTZ run is depicted in Figure 3-4. These Figures were made from runs of the POSTZ Model on a COMPAQ DESKPRO computer, using MS-DOS Version 2.1. The Program was also tested on the NCC UNIVAC with this same test case and produced identical output values. The output results also match the values given in the User's Instructions for the SHORTZ Model.

Figure 3-1 Sample SHORTZ Input File

```
2EXAMPLE SHORT TERM PROBLEM - PROGRAM SHORTZ

 17  15   1   3  24   5
      0  24   0       3   1   1
   602000    603000    604000    604500    605000    605500    606000    606500
   607000    607500    608000    608500    609000    609500    610000    611000
   612000
   605167
  4487000   4488000   4488500   4489000   4489500   4490000   4490500   4491000
  4491500   4492000   4493000   4494000   4495000   4496000   4497000
  4489107
      358       347       317       341       375       396       332       351
      387       305       280       381       300       256       286       305
      375
      230       230       226       229       274       349       360       305
      366       317       296       247       280       366       354       373
      320
      250       259       230       226       262       282       320       370
      274       250       241       305       286       326       372       335
      381
      241       308       253       226       238       268       314       262
      274       250       280       363       329       293       347       314
      366
      288       296       290       226       232       229       238       244
      250       241       329       293       347       354       360       372
      366
      338       308       232       229       229       290       323       280
      280       274       265       311       355       354       347       335
      360
      354       280       226       232       229       282       296       335
      320       290       323       315       354       311       314       290
      296
      335       320       226       235       258       244       293       326
      338       323       320       379       372       372       277       344
      329
      326       317       229       238       268       235       286       305
      338       369       363       360       354       290       320       369
      335
      311       344       226       244       286       296       229       299
      280       399       349       305       283       283       293       360
      363
      305       244       229       250       305       274       268       296
      300       274       290       271       290       286       317       320
      396
```

```
      286       349       232       226       285       293       299       329
      323       314       323       274       290       288       296       308
      326
      317       363       364       265       238       232       226       226
      232       286       235       293       296       311       274       290
      323
      349       317       323       308       229       241       280       267
      256       232       232       229       268       323       308       338
      344
      329       347       320       235       258       311       286       280
      280       302       280       229       226       254       314       335
      344
    274.
   .683              366.7
   1   1   1   1   1
   116   117   118  -117  -118
  116        318.15 6043804488740   67.1    229    472 160.98          2.60
  117        318.15 6043804488740   62.5    229    444 162.14          1.85
  118       1260.00 6023304487800  229.0    229    411 881.46          3.20
0100    170  5.4017      953    283        .17 .0735   .1051   .0735   .1051
0200    190  6.6878     1068    284        .17 .0735   .1051   .0735   .1051
0300    210 10.0316     1184    285        .17 .0735   .1051   .0735   .1051
0400    220  9.7744     1299    285        .17 .0735   .1051   .0735   .1051
0500    245  8.2311     1415    283        .17 .0735   .1051   .0735   .1051
0600    255  9.2600     1530    282        .17 .0735   .1051   .0735   .1051
0700    255  9.7744     1645    280        .17 .0735   .1051   .0735   .1051
0800    250 10.2889     1598    280        .17 .0735   .1051   .0735   .1051
0900    250  9.0028     1551    280        .17 .0735   .1051   .0735   .1051
1000    250  8.4883     1504    279        .17 .0735   .1051   .0735   .1051
1100    250  8.2311     1457    279        .17 .0735   .1051   .0735   .1051
1200    250  7.2022     1410    279        .17 .0735   .1051   .0735   .1051
1300    250  9.2600     1363    279        .17 .0735   .1051   .0735   .1051
1400    250  7.7167     1316    278        .17 .0735   .1051   .0735   .1051
1500    255  6.6878     1269    278        .17 .0735   .1051   .0735   .1051
1600    260  6.1733     1221    277        .17 .0735   .1051   .0735   .1051
1700    260  7.7167     1174    276        .17 .0735   .1051   .0735   .1051
1800    265  6.6878     1127    276        .17 .0735   .1051   .0735   .1051
1900    260  7.7167     1080    275        .17 .0735   .1051   .0735   .1051
2000    250  6.6878     1033    275        .17 .0735   .1051   .0735   .1051
2100    250  5.9161      986    275        .17 .0735   .1051   .0735   .1051
2200    240  6.1733      939    275        .17 .0735   .1051   .0735   .1051
2300    260  6.1733      892    274        .17 .0735   .1051   .0735   .1051
0000    270  5.9161      845    274        .17 .0735   .1051   .0735   .1051
```

Figure 3-2 Sample SHORTZ Ouput File

SHORTZ (VERSION 92326)
AN AIR QUALITY DISPERSION MODEL IN
SECTION 2. NON-GUIDELINE MODELS,
IN UNAMAP (VERSION 5) DEC 92.
SOURCE: FILE 23 ON UNAMAP MAGNETIC TAPE FROM NTIS.

TABLE 1

- GENERAL INPUT DATA -

NUMBER OF INPUT SOURCES	(NSOURC) =	3	
NUMBER OF X GRID COORDINATES	(NXPNTS) =	17	
NUMBER OF Y GRID COORDINATES	(NYPNTS) =	15	
TOTAL NUMBER OF HOURS IN EACH DAY	(NHOURS) =	24	
NUMBER OF DAYS OR CASES	(NDAYS) =	1	
NUMBER OF CONCENTRATION REPORTS (SOURCE COMBINATIONS)	(NGROUP) =	5	
NUMBER OF DISCRETE CALCULATION POINTS	(NXWYPT) =	1	
MET DATA INPUT CARD RATE (1=HOURLY,2=2 HOURLY,ETC)	(ISW(1)) =	1	
IS CONCENTRATION CALCULATED AT BASE RATE PRINTED	(ISW(2)) =	0	
NO. OF HOURS IN FIRST AVERAGE CONCENTRATION PRINTED	(ISW(3)) =	24	
NO. OF HOURS IN SECOND AVERAGE CONCENTRATION PRINTED	(ISW(4)) =	0	
NO. OF HOURS IN THIRD AVERAGE CONCENTRATION PRINTED	(ISW(5)) =	0	
ARE TERRAIN ELEVATION HEIGHTS USED	(ISW(7)) =	1	
IS WIND SPEED TERRAIN FOLLOWING	(ISW(9)) =	0	
ARE CONCENTRATIONS AVERAGED OVER DAYS OR CASES	(ISW(11))=	0	
IS THE FORMAT FOR SOURCE DATA READ	(ISW(12))=	0	
IS COORDINATE SYSTEM CARTESIAN (=0) OR POLAR (=1)	(ISW(13))=	0	
ARE DISCRETE RECEPTORS CARTESIAN (=0) OR POLAR (=1)	(ISW(14))=	0	
ARE SOURCE COORDINATES CARTESIAN (=0) OR POLAR (=1)	(ISW(15))=	0	
SIGEPU SIGAPU FOR ALL SOURCES OPTION	(ISW(16))=	0	
RURAL/URBAN MODE OPTION (RURAL=0),(URBAN=1)	(ISW(17))=	0	
MODEL UNITS CONVERSION FACTOR	(TK) =	.10000000E+07	
ACCELERATION OF GRAVITY	(G) =	9.8000	(METERS/SEC**2)
HEIGHT OF MEASUREMENT OF WIND SPEED, ETC	(ZR) =	6.0960	(METERS)
ENTRAINMENT COEFFICIENT FOR UNSTABLE ATMOSPHERE	(GAMMA1) =	.600	
ENTRAINMENT COEFFICIENT FOR STABLE ATMOSPHERE	(GAMMA2) =	.900	
DISTANCE OVER WHICH RECTILINEAR PLUME EXPANSION OCCURS	(XRY) =	50.0000	(METERS)
DECAY COEFFICIENT FOR PHYSICAL OR CHEMICAL DEPLETION	(DECAY) =,	.00000000E+00	
ANGULAR DISPL OF GRID SYSTEM FROM TRUE NORTH	(ROTATE) =	.683	
ELEVATION OF BASE OF WEATHER STATION	(HA) =	366.70	(METERS)
X ORIGIN OF POLAR COORDINATES	(UTMX) =	.00	(METERS)
Y ORIGIN OF POLAR COORDINATES	(UTMY) =	.00	(METERS)

- COORDINATE SYSTEM X AXIS (METERS) *-*

.50200000E+06, .50300000E+06, .50400000E+06, .50450000E+06, .50500000E+06, .50550000E+06, .50600000E+06, .50650000E+06,
.50700000E+06, .50750000E+06, .50800000E+06, .50850000E+06, .50900000E+06, .50950000E+06, .51000000E+06, .51050000E+06,
.51200000E+06,

- COORDINATE SYSTEM Y AXIS (METERS)*-*

.44870000E+07, .44880000E+07, .44885000E+07, .44890000E+07, .44895000E+07, .44900000E+07, .44905000E+07, .44910000E+07,
.44915000E+07, .44920000E+07, .44930000E+07, .44940000E+07, .44950000E+07, .44960000E+07, .44970000E+07,

- COORDINATES OF DISCRETE POINTS (METERS,METERS)*-*

(X,Y) = (505167.0, 4499107.0), (

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TABLE 1 (CONT)

- GENERAL INPUT DATA -

NUMBER OF SOURCES IN EACH CONCENTRATION REPORT GROUP 1 TO 5 = 1, 1, 1, 1, 1,
SOURCE NUMBERS FOR EACH OF THE ABOVE GROUPS = 116, 117, 118, -117, -118,

TABLE 2

- GENERAL INPUT DATA -

- GRID SYSTEM TERRAIN HEIGHTS (METERS) *-*

- GRID SYSTEM X AXIS (METERS) -

Y AXIS (METERS)	502000.000	503000.000	504000.000	504500.000	505000.000	505500.000	506000.000	506500.000	507000.000
	- HEIGHT -								
4497000.000	329.0000000	347.0000000	320.0000000	235.0000000	258.0000000	311.0000000	286.0000000	280.0000000	280.000000
4496000.000	349.0000000	317.0000000	323.0000000	308.0000000	229.0000000	241.0000000	280.0000000	267.0000000	256.000000
4495000.000	317.0000000	363.0000000	364.0000000	265.0000000	238.0000000	232.0000000	226.0000000	226.0000000	232.0000000
4494000.000	296.0000000	349.0000000	232.0000000	226.0000000	295.0000000	293.0000000	299.0000000	329.0000000	323.000000
4493000.000	305.0000000	244.0000000	229.0000000	250.0000000	305.0000000	274.0000000	268.0000000	296.0000000	300.000000
4492000.000	311.0000000	344.0000000	226.0000000	244.0000000	296.0000000	296.0000000	229.0000000	299.0000000	290.0000000
4491500.000	326.0000000	317.0000000	229.0000000	238.0000000	268.0000000	235.0000000	286.0000000	305.0000000	238.0000000
4491000.000	335.0000000	320.0000000	226.0000000	235.0000000	258.0000000	244.0000000	293.0000000	325.0000000	332.000000
4490500.000	354.0000000	280.0000000	226.0000000	232.0000000	229.0000000	282.0000000	296.0000000	335.0000000	320.000000
4490000.000	338.0000000	308.0000000	232.0000000	229.0000000	229.0000000	290.0000000	323.0000000	290.0000000	290.0000000
4489500.000	288.0000000	296.0000000	290.0000000	226.0000000	232.0000000	229.0000000	238.0000000	244.0000000	250.000000
4489000.000	241.0000000	308.0000000	253.0000000	226.0000000	238.0000000	258.0000000	314.0000000	262.0000000	274.000000
4488500.000	250.0000000	259.0000000	230.0000000	226.0000000	262.0000000	282.0000000	320.0000000	370.0000000	274.0000000
4488000.000	230.0000000	230.0000000	226.0000000	229.0000000	274.0000000	349.0000000	360.0000000	395.0000000	366.000000
4487000.000	358.0000000	347.0000000	317.0000000	341.0000000	375.0000000	396.0000000	332.0000000	351.0000000	397.000000

- GRID SYSTEM X AXIS (METERS) -

Y AXIS (METERS)	507500.000	509000.000	508500.000	509000.000	509500.000	510000.000	511000.000	512000.000
	- HEIGHT -							
4497000.000	302.0000000	280.0000000	229.0000000	226.0000000	254.0000000	314.0000000	335.0000000	344.0000000
4496000.000	232.0000000	232.0000000	229.0000000	268.0000000	323.0000000	308.0000000	338.0000000	344.0000000
4495000.000	296.0000000	235.0000000	293.0000000	296.0000000	311.0000000	274.0000000	290.0000000	323.0000000
4494000.000	314.0000000	323.0000000	274.0000000	290.0000000	283.0000000	296.0000000	308.0000000	326.0000000
4493000.000	274.0000000	290.0000000	271.0000000	290.0000000	296.0000000	317.0000000	320.0000000	395.0000000
4492000.000	399.0000000	349.0000000	305.0000000	283.0000000	283.0000000	293.0000000	350.0000000	362.0000000
4491500.000	359.0000000	353.0000000	350.0000000	354.0000000	290.0000000	320.0000000	359.0000000	335.0000000
4491000.000	323.0000000	320.0000000	379.0000000	372.0000000	372.0000000	277.0000000	344.0000000	339.0000000
4490500.000	290.0000000	323.0000000	315.0000000	354.0000000	311.0000000	314.0000000	290.0000000	295.0000000
4490000.000	274.0000000	265.0000000	311.0000000	355.0000000	354.0000000	347.0000000	335.0000000	350.0000000
4489500.000	241.0000000	329.0000000	293.0000000	347.0000000	354.0000000	350.0000000	372.0000000	356.0000000
4489000.000	250.0000000	290.0000000	363.0000000	329.0000000	293.0000000	347.0000000	314.0000000	365.0000000
4488500.000	250.0000000	241.0000000	305.0000000	286.0000000	326.0000000	372.0000000	335.0000000	381.0000000
4488000.000	317.0000000	296.0000000	247.0000000	280.0000000	366.0000000	354.0000000	373.0000000	320.0000000
4487000.000	305.0000000	280.0000000	381.0000000	300.0000000	256.0000000	286.0000000	305.0000000	375.0000000

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TABLE 2 (CONT)

- GENERAL INPUT DATA -

- DISCRETE POINT TERRAIN HEIGHTS (METERS) *-*

X (METERS)	Y (METERS)	HEIGHT	X (METERS)	Y (METERS)	HEIGHT	X (METERS)	Y (METERS)	HEIGHT
505167.0	4489107.0	274.0000000						

TABLE 3

- SOURCE INPUT DATA -

- SOURCE INVENTORY -

C A R D	T A P E	SOURCE NUMBER	T Y P E	SOURCE STRENGTH (GRAMS/SEC)	X COORDINATE (METERS)	Y COORDINATE (METERS)	HEIGHT ABOVE GROUND (METERS)	IF TYPE=0 TEMP (DEG K) IF TYPE=1OR2 LENGTH SHORT SIDE (MTRS)	IF TYPE=0 VOL. EMISS. RT. M**3/SEC IF TYPE=1OR2 LENGTH LONG SIDE (MTRS)	ANGLE TO LONG SIDE (DEG)	STACK INNER RADIUS (METERS)	ELEVATION AT STACK BASE (METERS)	PARTICULATE SETTLING VELOCITY (METERS/SEC)	DISTRIBUTIO FREQUENCY OF OCCURRENCE (FRACTION)
X		116	0	318.150	604380.00	4488740.00	67.10	472.000	160.980	.0	2.600	229.00		
X		117	0	318.150	604380.00	4488740.00	62.50	444.000	152.140	.0	1.850	229.00		
X		119	0	1260.000	602330.00	4487800.00	229.00	411.000	881.460	.0	3.200	229.00		

TABLE 4

- METEOROLOGICAL INPUT DATA -

HOUR	WIND DIRECTION (DEGREES) THETA	WIND SPEED (MTR/SEC) UBAR	LAYER DEPTH (METERS) HM	AMBIENT TEMP (DEG K) TA	VERT GRAD OF POT TMP (DEG K/M) DPDZ	STAB ILITY CAT. ISTBLE	WND SPD POWER LAW EXPONENT P	STD DEV EL ANGLE, SOR TYPE 0 SIGEPU(RAD)	STD DEV AZ ANGLE, SOR TYPE 0 SIGAPU(RAD)	STD DEV EL ANGLE, SOR TYPE 1OR2 SIGEPL(RAD)	STD DEV AZ ANGLE, SOR TYPE 1OR2 SIGAPL(RAD)	LATERAL DIFFUSION COEFFICIENT ALPHA
100	170.0000	5.4017	953.000	283.000	.0000		.1700	.0735000	.1051000	.0735000	.1051000	.9000
200	190.0000	6.6878	1068.000	284.000	.0000		.1700	.0735000	.1051000	.0735000	.1051000	.9000
300	210.0000	10.0316	1184.000	285.000	.0000		.1700	.0735000	.1051000	.0735000	.1051000	.9000
400	220.0000	9.7744	1299.000	285.000	.0000		.1700	.0735000	.1051000	.0735000	.1051000	.9000
500	245.0000	8.2311	1415.000	283.000	.0000		.1700	.0735000	.1051000	.0735000	.1051000	.9000
600	255.0000	9.2600	1530.000	282.000	.0000		.1700	.0735000	.1051000	.0735000	.1051000	.9000
700	255.0000	9.7744	1645.000	280.000	.0000		.1700	.0735000	.1051000	.0735000	.1051000	.9000
800	250.0000	10.2889	1598.000	280.000	.0000		.1700	.0735000	.1051000	.0735000	.1051000	.9000
900	250.0000	9.0029	1551.000	280.000	.0000		.1700	.0735000	.1051000	.0735000	.1051000	.9000
000	250.0000	8.4883	1504.000	279.000	.0000		.1700	.0735000	.1051000	.0735000	.1051000	.9000
100	250.0000	8.2311	1457.000	279.000	.0000		.1700	.0735000	.1051000	.0735000	.1051000	.9000
1200	250.0000	7.2022	1410.000	279.000	.0000		.1700	.0735000	.1051000	.0735000	.1051000	.9000
1300	250.0000	9.2600	1363.000	279.000	.0000		.1700	.0735000	.1051000	.0735000	.1051000	.9000
1400	250.0000	7.7167	1316.000	278.000	.0000		.1700	.0735000	.1051000	.0735000	.1051000	.9000
1500	255.0000	6.6878	1269.000	278.000	.0000		.1700	.0735000	.1051000	.0735000	.1051000	.9000
1600	260.0000	6.1733	1221.000	277.000	.0000		.1700	.0735000	.1051000	.0735000	.1051000	.9000
1700	260.0000	7.7167	1174.000	276.000	.0000		.1700	.0735000	.1051000	.0735000	.1051000	.9000
1800	265.0000	6.6878	1127.000	276.000	.0000		.1700	.0735000	.1051000	.0735000	.1051000	.9000
1900	260.0000	7.7167	1080.000	275.000	.0000		.1700	.0735000	.1051000	.0735000	.1051000	.9000
2000	250.0000	6.6878	1033.000	275.000	.0000		.1700	.0735000	.1051000	.0735000	.1051000	.9000
2100	250.0000	5.9161	986.000	275.000	.0000		.1700	.0735000	.1051000	.0735000	.1051000	.9000
2200	240.0000	6.1733	939.000	275.000	.0000		.1700	.0735000	.1051000	.0735000	.1051000	.9000
2300	260.0000	5.1733	892.000	274.000	.0000		.1700	.0735000	.1051000	.0735000	.1051000	.9000
0	270.0000	5.9161	845.000	274.000	.0000		.1700	.0735000	.1051000	.0735000	.1051000	.9000

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TABLE 5

24 HOUR GROUND LEVEL CONCENTRATION (MICROGRAMS/CUBIC METER) FROM SOURCES 1-6

- HOUR(S) 0 TO 2300 -

- GRID SYSTEM X AXIS (METERS) -

(THE MAXIMUM CONCENTRATION IS 703.9803000 AT X= 605000.0, Y=4489000.0)

Y AXIS (METERS)	602000.000	603000.000	604000.000	604500.000	605000.000	605500.000	606000.000	606500.000	607000.000
	- CONCENTRATION -								
4497000.000	.5925970	1.5044350	.2215371	.2029481	.8092649	1.6497090	1.5834970	.7528650	.1957[illegible]
4496000.000	.3250352	1.9542720	.3437609	.2930565	1.2350180	2.2151770	1.5885710	.4777990	.1430093
4495000.000	.1003984	2.3557710	.5860771	.4359421	1.9995920	2.9550010	1.2547620	.2413243	.4719210
4494000.000	.0107155	2.1938170	.9932383	.6869537	3.4535380	3.3057270	.6900617	.5326593	[illegible]
4493000.000	.0001398	1.0225120	2.0061160	1.2503640	6.0568220	2.6153250	.6121413	2.7726070	[illegible]
4492000.000	.0000000	.1291423	4.5009410	2.6044530	9.5372980	1.1373510	4.5135740	[illegible]	[illegible]
4491500.000	.0000000	.0104869	6.9260990	4.0543040	9.9648290	2.2496440	8.0388390	[illegible]	[illegible]
4491000.000	.0000000	.0001106	9.5898230	6.8793920	7.4840510	9.0961670	10.4509100	[illegible]	[illegible]
4490500.000	.0000000	.0000000	10.3085100	12.7106900	3.7723870	18.4789900	10.1667100	2.4862350	[illegible]
4490000.000	.0000000	.0000000	4.0858920	24.4354800	23.5652100	23.2355400	9.7312210	[illegible]	[illegible]
4489500.000	.0000000	.0000000	.0795788	26.5601800	54.1037000	31.3449100	176.5297000	[illegible]	[illegible]
4489000.000	.0000000	.0000000	.0000000	2.0146020	703.9803000	490.3597000	222.5909000	[illegible]	[illegible]
4488500.000	.0000000	.0000000	.0000000	.0000000	.0004179	1.1893320	5.6338900	[illegible]	[illegible]
4488000.000	.0000000	.0000000	.0000000	.0000000	.0000000	.0000000	.0000022	.0005163	[illegible]
4487000.000	.0000000	.0000000	.0000000	.0000000	.0000000	.0000000	.0000000	.0000000	[illegible]

- GRID SYSTEM X AXIS (METERS) -

(THE MAXIMUM CONCENTRATION IS 703.9803000 AT X= 605000.0, Y=4489000.0)

Y AXIS (METERS)	607500.000	608000.000	608500.000	609000.000	609500.000	610000.000	611000.000	612000.000
	- CONCENTRATION -							
4497000.000	.1205282	.3690108	.7620249	.9542992	.8712346	.7559341	.8099905	.4795205
4496000.000	.4177227	.9779695	1.2349750	1.0731000	.9758595	1.0377040	.8650574	.1539801
4495000.000	1.3120980	1.6332930	1.3763450	1.3519490	1.3465440	.9755375	.1934259	.1241339
4494000.000	2.2635730	1.9939370	1.9466140	1.5292350	.7402271	.2520663	.2905229	[illegible]
4492000.000	2.9139260	2.5960250	1.2115910	.3447785	.2988307	.7125705	2.0530250	[illegible]
4491500.000	2.2827470	.5253664	.9010550	2.4379300	4.1883540	5.7801730	[illegible]	[illegible]
4491000.000	.7158939	1.3991570	4.7386790	7.4501800	10.3277900	14.0069900	[illegible]	[illegible]
4490500.000	4.4014030	9.5842400	14.9854800	21.3619900	26.7579700	29.3180900	[illegible]	[illegible]
4490000.000	22.4247200	36.0867500	45.3380200	44.9431500	39.2156300	30.4879400	19.2423900	[illegible]
4489500.000	37.2356100	73.9470800	55.4491100	40.5044500	30.7198900	24.1052900	15.9505300	[illegible]
4489000.000	77.3923500	55.7816800	39.3820900	29.2389300	21.9905100	16.9919300	10.5752900	[illegible]
4488500.000	34.9214000	24.9591000	19.4492000	13.7789600	10.5927400	8.5643200	5.7935590	[illegible]
4488000.000	5.9596820	5.3525480	5.1360030	4.4392390	3.9732790	3.5169310	2.7542090	[illegible]
4487000.000	.0546519	.1355394	.2301360	.3511621	.4662012	.5462136	.5485255	[illegible]
4487000.000	.0000000	.0000000	.0000002	.0000041	.0000330	.0001659	.0014541	[illegible]

TABLE 5 (CONT)

24 HOUR GROUND LEVEL CONCENTRATION (MICROGRAMS/CUBIC METER) FROM SOURCES 115

- HOUR(S) 0 TO 2300 -

- DISCRETE POINT RECEPTORS -

(THE MAXIMUM CONCENTRATION IS, 719.1874000 AT X= 605167.0, Y=4489107.0)

X (METERS)	Y (METERS)	CONCENTRATION	X (METERS)	Y (METERS)	CONCENTRATION	X (METERS)	Y (METERS)	CONCENTRATION
605167.0	4489107.0	719.1874000						

TABLE 6

24 HOUR GROUND LEVEL CONCENTRATION (MICROGRAMS/CUBIC METER) FROM SOURCES 1 17

- HOUR(S) 0 TO 2300 -

- GRID SYSTEM X AXIS (METERS) -

(THE MAXIMUM CONCENTRATION IS 216.5484000 AT X= 605500.0, Y=4489000.0)

Y AXIS (METERS)	602000.000	603000.000	604000.000	604500.000	605000.000	605500.000	606000.000	606500.000	607000.000
	- CONCENTRATION -								
4497000.000	.5840322	1.4828680	.2146315	.1615749	.6288304	1.2922060	1.2360030	.5874428	.155455
4496000.000	.3203222	1.9250540	.3346512	.2346455	.9492611	1.7073390	1.2343310	.3717966	.1279575
4495000.000	.0988631	2.3213540	.5734432	.3430317	1.5264980	2.1777650	.9569063	.1953373	.4526503
4494000.000	.0105380	2.1602910	.9705455	.5254368	2.6471320	2.5434830	.5392794	.5246304	1.934793
4493000.000	.0001374	1.0023660	1.9604090	.9396726	4.6258500	1.9679630	.5649772	2.7292500	2.350991
4492000.000	.0000000	.1268465	4.3821580	1.8483790	5.9935610	.9255843	4.1460890	5.1488350	1.397120
4491500.000	.0000000	.0102633	6.7157480	2.7222210	6.9393590	1.9615770	7.6762530	6.7776340	3.397017
4491000.000	.0000000	.0001079	9.3189390	4.1925190	4.8390230	7.9298220	9.9173630	5.4495790	.057044
4490500.000	.0000000	.0000000	9.7613190	6.4423120	2.3080330	16.3799900	9.5169190	1.9119500	8.7907050
4490000.000	.0000000	.0000000	3.7404190	7.9690680	13.3092200	19.8600300	6.1210470	27.0237900	59.122950
4489500.000	.0000000	.0000000	.0689247	1.8308670	16.7915200	12.9612100	109.0089000	138.9838000	95.190950
4489000.000	.0000000	.0000000	.0000000	.0000014	41.7961600	216.5484000	156.3864000	52.3541500	10.5559900
4488500.000	.0000000	.0000000	.0000000	.0000000	.0000538	.5913732	3.8970960	6.0713220	4.9369960
4488000.000	.0000000	.0000000	.0000000	.0000000	.0000000	.0000000	.0000016	.0004690	.009472
4487000.000	.0000000	.0000000	.0000000	.0000000	.0000000	.0000000	.0000000	.0000000	.000000

- GRID SYSTEM X AXIS (METERS) -

(THE MAXIMUM CONCENTRATION IS 216.5484000 AT X= 605500.0, Y=4489000.0)

Y AXIS (METERS)	607500.000	608000.000	608500.000	609000.000	609500.000	610000.000	611000.000	612000.000
	- CONCENTRATION -							
4497000.000	.1150303	.3652494	.7521905	.9521827	.9637392	.7544969	.3096062	.0794340
4496000.000	.4096686	.9619373	1.2152960	1.0632990	.9753856	1.0347220	.5547487	.1527710
4495000.000	1.2995060	1.8008310	1.3666630	1.3435700	1.3420590	.9669295	.1903371	.1022955
4494000.000	2.2527070	1.2883940	1.0192530	1.5154350	.7354209	.2462026	.2188375	.0222409
4493000.000	2.9438630	2.5592260	1.1878910	.3303909	.2248292	.5794514	1.8598020	.3477810
4492000.000	2.2913640	.4903683	.5732105	1.9319390	3.2802450	4.7972110	2.9227030	.1.2778200
4491500.000	.6442634	1.4357500	3.6913760	6.1595900	8.2994750	12.5591900	17.4358900	15.8875530
4491000.000	3.2992270	7.5257510	12.9623100	19.2979900	24.3718700	25.2739100	20.8775100	14.1755200
4490500.000	18.4208900	32.0906000	40.6405300	40.7618100	34.1396900	27.0921400	16.5419800	11.2396900
4490000.000	74.0384400	52.9497000	48.5968200	35.5159700	26.4697500	20.4153800	13.0949200	9.9330140
4489500.000	59.6277000	46.1479800	31.5282300	23.8167400	17.9261500	13.5433500	8.4997210	5.6952920
4489000.000	25.0575900	18.7355900	14.5463000	10.8235500	8.2446820	6.7851320	4.5713420	3.3774980
4488500.000	4.3904240	4.0098480	3.9984690	3.4562500	3.1392980	2.8085160	2.1907600	1.7971560
4488000.000	.0421796	.1047905	.1766849	.2744120	.3729145	.4362422	.5200560	.5465429
4487000.000	.0000000	.0000000	.0000002	.0000032	.0000259	.0001311	.0011658	.0045919

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TABLE 6 (CONT)

24 HOUR GROUND LEVEL CONCENTRATION (MICROGRAMS/CUBIC METER) FROM SOURCES 111

- HOUR(S) 0 TO 2300 -

- DISCRETE POINT RECEPTORS -
(THE MAXIMUM CONCENTRATION IS, 227.1076000 AT X= 605167.0, Y=4489107.0)

X (METERS)	Y (METERS)	CONCENTRATION	X (METERS)	Y (METERS)	CONCENTRATION	X (METERS)	Y (METERS)	CONCENTRATION
605167.0	4489107.0	227.1076000						

TABLE 7

24 HOUR GROUND LEVEL CONCENTRATION (MICROGRAMS/CUBIC METER) FROM SOURCES 1-18

- HOUR(S) 0 TO 2300 -

- GRID SYSTEM X AXIS (METERS) -

(THE MAXIMUM CONCENTRATION IS 65.3336300 AT X= 606000.0, Y=4499000.0)

Y AXIS (METERS)	602000.000	603000.000	604000.000	604500.000	605000.000	605500.000	606000.000	606500.000	607000.000
	- CONCENTRATION -								
4497000.000	.3135576	1.1191820	2.4490670	1.3766790	.4973253	.1563836	.2596268	.7094654	1.269761
4496000.000	.4302749	1.5187040	2.5337910	1.0875440	.2505524	.2450550	.7960175	1.5226540	1.781777
4495000.000	.5746663	2.3235350	2.3928300	.5726251	.2453905	.8452041	1.8052000	2.1243720	1.9221500
4494000.000	.7817338	3.3899610	1.2991400	.2989899	.9876341	2.4715770	2.9515600	2.4758090	2.530550
4493000.000	1.2206600	3.7246600	.5328916	.9622607	3.2909970	3.4518590	3.0046340	3.0593050	2.991691
4492000.000	1.9215920	5.4932910	.7938274	3.5616540	4.4052410	4.3743300	3.1393580	1.5100350	.8137622
4491500.000	2.3091350	5.8106370	2.0385550	4.4751840	4.5382950	3.7920220	1.7906620	.4955125	.3880267
4491000.000	2.6643630	4.9580160	3.7374360	4.2439250	4.7512300	1.9459250	.5377139	1.4940960	2.971211
4490500.000	2.9568150	1.9521610	3.9000510	4.3490660	1.8716770	.6002166	2.3016290	6.6225160	10.979154
4490000.000	1.4772980	.5725184	3.3761590	1.7219000	.4934537	3.7874290	11.1454100	19.0555000	29.1877500
4489500.000	.0589094	.5232643	2.1960000	.4017198	3.7743600	12.9386800	29.6034100	43.2996300	47.094040
4489000.000	.0000054	.5161535	.2956836	4.4699620	23.8142900	50.7727500	65.3336300	44.5926300	39.251220
4488500.000	.0000000	.0001355	2.7162790	12.3209900	29.5942000	35.0744900	39.9559200	41.1220700	24.6059900
4488000.000	.0000000	.0000000	.2453971	1.9873240	7.9827760	17.9980300	19.0228400	12.9005009	14.423670
4487000.000	.0000000	.0000000	.0000000	.0000166	.0016619	.0189031	.0523170	.1466552	.305695

- GRID SYSTEM X AXIS (METERS) -

(THE MAXIMUM CONCENTRATION IS 65.3336300 AT X= 606000.0, Y=4499000.0)

Y AXIS (METERS)	607500.000	608000.000	608500.000	609000.000	609500.000	610000.000	611000.000	612000.000
	- CONCENTRATION -							
4497000.000	1.5469320	1.3950730	1.1540450	1.1603670	1.2692300	1.2547480	.5629517	.1979152
4496000.000	1.5470840	1.3814250	1.4539680	1.5257730	1.2020820	.9503131	.3125590	.1101245
4495000.000	1.9263260	1.3545220	1.7102410	1.1378530	.5829511	.2401799	.1525515	.5553030
4494000.000	2.4052320	1.6419410	.7519120	.2979919	.1523062	.2902096	1.1545100	2.2072660
4493000.000	1.0286170	.3459035	.2470275	.5995145	1.2511220	2.1714150	3.8251240	5.1093220
4492000.000	.5079088	1.5147780	3.7660590	4.2597530	5.4021910	5.3989530	4.1130200	15.2295000
4491500.000	2.5406560	4.5690950	6.5649190	8.7079200	10.7005000	14.1991300	9.9945000	20.2542000
4491000.000	5.6531310	9.5975520	14.7412200	19.3742300	23.5744100	23.8203200	25.0619100	20.4360300
4490500.000	15.9165200	24.2241200	29.2472900	34.3427500	32.2480900	29.8619100	22.4274800	17.0251600
4490000.000	37.3819400	39.6715300	40.9504600	37.9937100	31.9081900	26.5192000	19.3672900	15.5122100
4489500.000	41.7538000	42.7579900	32.9927600	29.9173700	25.5605900	22.1635100	17.1790000	13.4967000
4489000.000	30.9936600	28.7169900	29.5403300	22.9327100	18.6185700	17.1573000	12.4156200	10.0755900
4488500.000	19.6042800	16.4967900	16.3192200	13.4202300	12.2871700	11.2341000	9.3099940	6.9537420
4488000.000	11.0195600	9.3390420	7.5187000	7.3496350	7.6490470	5.7863250	5.7577610	4.5800510
4487000.000	.3544237	.4713520	.7421083	.7505662	.7901366	.9259540	1.0948530	1.2953530

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TABLE 7 (CONT)

24 HOUR GROUND LEVEL CONCENTRATION (MICROGRAMS/CUBIC METER) FROM SOURCES 1'9

- HOUR(S) 0 TO 2300 -

- DISCRETE POINT RECEPTORS -
(THE MAXIMUM CONCENTRATION IS, 32.5627500 AT X= 605167.0, Y=4489107.0)

X (METERS)	Y (METERS)	CONCENTRATION	X (METERS)	Y (METERS)	CONCENTRATION	X (METERS)	Y (METERS)	CONCENTRATION
605167.0	4489107.0	32.5627500						

TABLE 8

24 HOUR GROUND LEVEL CONCENTRATION (MICROGRAMS/CUBIC METER) FROM SOURCES 116 -117

- HOUR(S) 0 TO 2300 -

- GRID SYSTEM X AXIS (METERS) -

(THE MAXIMUM CONCENTRATION IS 745.7665000 AT X= 605000.0, Y=4489000.0)

Y AXIS (METERS)	602000.000	603000.000	604000.000	604500.000	605000.000	605500.000	606000.000	606500.000	607000.000
	- CONCENTRATION -								
4497000.000	1.1766290	2.9873030	.4361686	.3645229	1.4380950	2.9419150	2.8195000	1.3403080	.351221
4496000.000	.6453575	3.9793260	.6784121	.5277020	2.1842790	3.9225160	2.9230010	.8495857	.2709569
4495000.000	.1992616	4.6771250	1.1595200	.7789738	3.5260900	5.0327660	2.2116690	.4276717	.9304715
4494000.000	.0212535	4.3541080	1.9637840	1.2123910	6.1006700	5.8492090	1.2293410	1.0572990	3.675553
4493000.000	.0002772	2.0248780	3.9665250	2.1900370	10.6826700	4.5832990	1.1770190	5.5019520	5.542119
4492000.000	.0000000	.2559888	8.3831010	4.4528310	16.5309600	2.0629360	9.5595620	10.4110220	3.5471480
4491500.000	.0000000	.0207502	13.6418500	8.7365250	16.9041900	4.2112210	15.7151900	12.7106000	3.785237
4491000.000	.0000000	.0002185	19.0087600	11.0719100	12.3230700	16.9259900	20.3682800	10.9500400	2.100559
4490500.000	.0000000	.0000000	20.0698300	19.1530000	6.0804200	34.9589800	19.6836300	4.3991950	20.3951300
4490000.000	.0000000	.0000000	7.8263110	32.4045500	36.8754300	43.0955700	14.8522700	53.1027500	130.978700
4489500.000	.0000000	.0000000	.1485035	28.3910400	70.8952200	44.3061200	285.5375000	331.4354000	218.055000
4489000.000	.0000000	.0000000	.0000000	2.0146030	745.7665000	706.9080000	379.4773000	160.2924000	97.8255500
4488500.000	.0000000	.0000000	.0000000	.0000000	.0004718	1.7807050	9.5309860	13.8266000	11.497440
4488000.000	.0000000	.0000000	.0000000	.0000000	.0000000	.0000000	.0000039	.0011159	.021499
4487000.000	.0000000	.0000000	.0000000	.0000000	.0000000	.0000000	.0000000	.0000000	.000000

- GRID SYSTEM X AXIS (METERS) -

(THE MAXIMUM CONCENTRATION IS 745.7665000 AT X= 605000.0, Y=4489000.0)

Y AXIS (METERS)	607500.000	608000.000	608500.000	609000.000	609500.000	610000.000	611000.000	612000.000
	- CONCENTRATION -							
4497000.000	.2355595	.7352602	1.5142150	1.9164910	1.7349740	1.5103310	1.6195870	.9598526
4496000.000	.9272913	1.9399060	2.4502710	2.1253990	1.9522450	2.0724260	1.3099060	.3051572
4495000.000	2.6115930	3.2329130	2.7430090	2.6956190	2.6896030	1.9423670	.3937620	.2073206
4494000.000	4.5162900	2.7803200	2.9559660	3.0447210	1.4777480	.4982698	.5093615	.1220040
4493000.000	5.7627990	5.1552510	2.3934700	.6751694	.5136599	1.3520220	1.2268870	.0413250
4492000.000	4.5641110	1.0157350	1.5742550	4.2697700	7.4586090	10.5773900	10.8117400	5.0714720
4491500.000	1.3601570	2.3349050	8.4305550	13.6199100	19.2272500	26.5661900	36.5649700	22.5249200
4491000.000	7.5906390	17.2099900	27.9477900	40.5492900	51.1297400	53.5920100	44.0063200	30.1217700
4490500.000	40.8456100	58.1773400	85.9795600	95.7049800	72.3553200	57.5800700	35.8943500	24.5279000
4490000.000	161.2740000	136.8968000	104.0459000	76.2294100	57.1996500	44.5206700	29.9453500	19.9613000
4489500.000	137.0201000	101.9296000	70.9103200	53.0556700	39.8166500	30.5352700	19.0750200	12.8116600
4489000.000	59.9789900	43.5936900	33.0955000	24.6025200	19.8374300	15.3494500	10.3650000	7.0202250
4488500.000	10.3501100	9.3623940	9.1344720	7.9954990	7.1125770	6.3254470	4.9449700	4.0631870
4488000.000	.0969305	.2402299	.4068209	.6255742	.9390156	.9824557	1.1696920	1.2309810
4487000.000	.0000000	.0000000	.0000004	.0000073	.0000599	.0002971	.0026299	.0105212

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TABLE 8 (CONT)

24 HOUR GROUND LEVEL CONCENTRATION (MICROGRAMS/CUBIC METER) FROM SOURCES 116 -117

- HOUR(S) 0 TO 2300 -

- DISCRETE POINT RECEPTORS -
(THE MAXIMUM CONCENTRATION IS, 946.2949000 AT X= 605167.0, Y=4489107.0)

X (METERS)	Y (METERS)	CONCENTRATION	X (METERS)	Y (METERS)	CONCENTRATION	X (METERS)	Y (METERS)	CONCENTRATION
605167.0	4489107.0	946.2949000						

TABLE 9

24 HOUR GROUND LEVEL CONCENTRATION (MICROGRAMS/CUBIC METER) FROM SOURCES 116 -118

- HOUR(S) 0 TO 2300 -

- GRID SYSTEM X AXIS (METERS) -

(THE MAXIMUM CONCENTRATION IS 769.5807000 AT X= 605000.0, Y=4499000.0)

Y AXIS (METERS)	602000.000	603000.000	604000.000	604500.000	605000.000	605500.000	606000.000	606500.000	607000.000
	- CONCENTRATION -								
4497000.000	1.4901870	4.1064860	2.8852360	1.7412020	1.9354210	3.0982990	3.0791260	2.0497730	1.62098
4496000.000	1.0756320	5.3980290	3.2122040	1.6152460	2.4348310	4.1675710	3.6190190	2.3722400	2.0697
4495000.000	.7739279	7.0006590	3.5523500	1.3515990	3.7714800	5.8779710	4.0169690	2.5620440	2.7526
4494000.000	.8029872	7.7440680	3.2529240	1.5013800	7.0883040	8.3207860	4.0909010	3.5941090	3.2082
4493000.000	1.2209370	5.7495380	4.4994160	3.1522970	13.9726600	9.0351470	4.1816530	2.7711640	2.934
4492000.000	1.9315920	6.7492790	9.5759290	8.1144850	20.9361000	5.4372650	11.7990200	11.4293500	9.0510
4491500.000	2.3091350	5.8313880	15.5804000	11.2617100	21.4424800	8.0032420	17.4959800	14.1962100	7.5744
4491000.000	2.6643630	4.8582350	22.7462000	15.3158400	17.0743000	18.7719100	20.9059900	12.4243200	5.0718
4490500.000	2.9568150	1.8521610	23.9698800	23.5020700	7.9520980	35.4591900	21.9852600	11.0207100	21.3042900
4490000.000	1.4772880	.6725184	11.2024700	34.1263500	37.3588800	46.8830000	25.9976800	21.1693500	160.14650
4489500.000	.0689084	.5232643	2.3345040	28.7927700	74.6695800	57.2448000	315.1409000	374.7249000	266.15900
4489000.000	.0000054	.5161535	.2956836	6.4845650	769.5807000	757.6808000	444.8110000	204.9750000	137.0050000
4488500.000	.0000000	.0001355	2.7162780	12.3209900	28.6946800	36.8551900	49.4869000	54.9436800	25.0934300
4488000.000	.0000000	.0000000	.2453971	1.3873240	7.8827750	17.9980300	19.0238400	12.3016200	14.445156
4487000.000	.0000000	.0000000	.0000000	.0000166	.0016618	.0189031	.0523170	.1466552	.20569

- GRID SYSTEM X AXIS (METERS) -

(THE MAXIMUM CONCENTRATION IS 769.5807000 AT X= 605000.0, Y=4499000.0)

Y AXIS (METERS)	607500.000	608000.000	608500.000	609000.000	609500.000	610000.000	611000.000	612000.000
	- CONCENTRATION -							
4497000.000	1.7924900	2.1203330	2.6682600	3.0768490	3.0042030	2.7650790	2.2986490	1.7567700
4496000.000	2.3744750	3.3213310	3.9142390	3.6831620	3.2552260	2.9227390	1.5432740	.4159935
4495000.000	4.4379190	5.0984240	4.4612490	3.8334720	3.2715640	2.1825460	.5453233	.0927575
4494000.000	5.9225130	5.4242720	4.5177800	3.2225130	1.5400540	.7881781	1.5639020	4.3100600
4493000.000	6.7914160	5.5012530	2.5467000	1.0545840	1.7652910	3.5234380	8.0529510	12.7695500
4492000.000	5.1120200	2.5305120	4.2403200	8.2295240	12.2707100	17.5753400	30.5239900	41.5000600
4491500.000	3.9009140	7.9039910	14.9953700	22.3267300	29.9277500	40.7553100	56.5495700	53.9991500
4491000.000	14.3427700	26.9075400	42.5890100	60.0235100	74.7041500	77.4133200	59.0581300	50.5577300
4490500.000	56.7621400	92.4014600	115.9258000	120.0477000	104.6034000	87.4419900	58.3219300	41.5539800
4490000.000	198.5560000	175.5683000	144.3954000	114.1141000	99.0978300	71.1388700	48.3126400	35.3935100
4489500.000	178.7738000	144.6877000	102.9031000	82.9730500	65.3772400	52.6987900	36.2530100	26.3083400
4489000.000	90.9726600	72.3106900	61.6359300	47.5352400	37.4559900	32.5167500	22.7906900	17.5959300
4488500.000	29.9543800	25.9591800	25.4537000	21.3157200	19.3997500	17.5595500	13.2539600	10.9969300
4488000.000	11.1153900	9.5792710	7.9255210	7.9752100	8.4880620	7.7687810	5.9364420	5.0110330
4487000.000	.3644837	.4713520	.7421098	.7505735	.7901954	.9252511	1.0974830	1.2948930

TABLE 9 (CONT)

24 HOUR GROUND LEVEL CONCENTRATION (MICROGRAMS/CUBIC METER) FROM SOURCES 116 -118

- HOUR(S) 0 TO 2300 -

- DISCRETE POINT RECEPTORS -
(THE MAXIMUM CONCENTRATION IS, 979.8577000 AT X= 505167.0, Y=4489107.0)

X (METERS)	Y (METERS)	CONCENTRATION	X (METERS)	Y (METERS)	CONCENTRATION	X (METERS)	Y (METERS)	CONCENTRATION
505167.0	4489107.0	979.8577000						

Figure 3-3 Sample POSTZ Input File

```
THIS IS A TEST OF THE POSTZ PROGRAM
 0 1 1 2 1 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 1 0
    1 1986
    3
 602000.  603000.   604000.
    4
 4494000. 4495000.  4496000.  4497000.
    1
605167.
4489107.
    2
  116
  117
    5
 602000.  4494000.  1000.
 605167.  4489107.  1000.
 602000.  4495000.  1000.
 603000.  4496000.  1000.
 604000.  4497000.  500.
    2
  116 2.
  117 2.
```

Figure 3-4 Sample POSTZ Output File

POSTZ - VERSION 1.0
A POST PROCESSOR FOR THE
SHORTZ AIR QUALITY MODEL
JULY, 1986

POSTZ - A POST PROCESSOR FOR THE SHORTZ MODEL

POSTZ RUN TITLE: THIS IS A TEST OF THE POSTZ PROGRAM
SHORTZ RUN TITLE: EXAMPLE SHORT TERM PROBLEM - PROGRAM SHORTZ

ISW(1) RESTRICT TIME LIMITS (1=YES,0=NO)	0
ISW(2) LIMIT RECEPTORS TO ANALYZE (1=YES,0=NO)	1
ISW(3) LIMIT SOURCES TO ANALYZE (1=YES,0=NO)	1
ISW(4) SPECIFY BACKGROUND CONCENTRATIONS (0=NO,1=UNIFORM,2=BY RECEPTOR)	2
ISW(5) SCALE CONCENTRATIONS FOR SPECIFIC SOURCES (1=YES,0=NO)	1

1-HOUR AVERAGE ANALYSIS:

ISW(6) HIGH-5 TABLE PREPARED (1=YES,0=NO)	0
ISW(7) TOP 50 TABLE PREPARED (1=YES,0=NO)	0
ISW(8) EXCEEDANCE TABLE PREPARED (1=YES,0=NO)	0

3-HOUR AVERAGE ANALYSIS:

ISW(9) HIGH-5 TABLE PREPARED (1=YES,0=NO)	0
ISW(10) TOP 50 TABLE PREPARED (1=YES,0=NO)	0
ISW(11) EXCEEDANCE TABLE PREPARED (1=YES,0=NO)	0

8-HOUR AVERAGE ANALYSIS:

ISW(12) HIGH-5 TABLE PREPARED (1=YES,0=NO)	0
ISW(13) TOP-50 TABLE PREPARED (1=YES,0=NO)	0
ISW(14) EXCEEDANCE TABLE PREPARED (1=YES,0=NO)	0

24-HOUR AVERAGE ANALYSIS:

ISW(15) HIGH-5 TABLE PREPARED (1=YES,0=NO)	1
ISW(16) TOP-50 TABLE PREPARED (1=YES,0=NO)	0
ISW(17) EXCEEDANCE TABLE PREPARED (1=YES,0=NO)	0

ANNUAL AVERAGE ANALYSIS:

ISW(18) HIGH-5 TABLE PREPARED (1=YES,0=NO)	0
ISW(19) TOP-50 TABLE PREPARED (1=YES,0=NO)	0
ISW(20) EXCEEDANCE TABLE PREPARED (1=YES,0=NO)	0

USER-SPECIFIED AVERAGING TIME ANALYSIS

ISW(21) HIGH-5 TABLE PREPARED (1=YES,0=NO)	0
ISW(22) TOP-50 TABLE PREPARED (1=YES,0=NO)	0
ISW(23) EXCEEDANCE TABLE PREPARED (1=YES,0=NO)	0
ISW(24) BLOCK OR RUNNING AVERAGES (0=BLOCK,1=RUNNING)	1
ISW(25) CALMS POLICY (1=YES,0=NO)	0
JULIAN DAY FOR START OF ANALYSIS	1
YEAR FOR START OF ANALYSIS	1986
JULIAN DAY FOR END OF ANALYSIS	1
YEAR FOR END OF ANALYSIS	1986

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RESTRICTING ANALYSIS TO CERTAIN RECEPTORS
THE FOLLOWING RECEPTORS WERE INCLUDED

(502000., 4494000.)	(503000., 4494000.)	(504000., 4494000.)	(502000., 4495000.)
(503000., 4495000.)	(504000., 4495000.)	(502000., 4496000.)	(503000., 4496000.)
(504000., 4496000.)	(502000., 4497000.)	(503000., 4497000.)	(504000., 4497000.)
(505167., 4489107.)	(		

THE ANALYSIS HAS BEEN CONFINED TO CERTAIN SOURCES
THE FOLLOWING SOURCES (BY IDENTIFICATION NUMBER) WERE INCLUDED

---

116 117

SEPARATE BACKGROUND CONCENTRATIONS HAVE BEEN
SPECIFIED FOR EACH RECEPTOR
(X-COORD,Y-COORD) VALUE

(502000., 4494000.) 1000. (505167., 4499107.) 1000. (502000., 4495000.) 1000. (503000., 4496000.) 1000.
(504000., 4497000.) 500. (

THE CONCENTRATIONS FROM CERTAIN SOURCES WERE
SCALED BY THE FOLLOWING AMOUNTS
(IDENTIFICATION NUMBER,SCALING VALUE)

(116, 2.00) (117, 2.00) (118, 1.00) (

HIGH FIVE TABLE FOR 24 HOUR AVERAGES

RECEPTOR COORDINATES METERS			HIGHEST FIVE CONCENTRATIONS VALUE(DAY,ENDING HOUR)				
X	Y	ELEV.	HIGHEST	2ND HIGH	3RD HIGH	4TH HIGH	5TH HIGH
502000.	4494000.	286.	1000.04(1,24)	958.38(1,23)	916.71(1,22)	875.04(1,21)	833.38(1,20)
503000.	4494000.	349.	8.71(1, 2)	8.71(1, 3)	8.71(1, 4)	8.71(1, 5)	8.71(1, 6)
504000.	4494000.	232.	3.93(1, 2)	3.93(1, 3)	3.93(1, 4)	3.93(1, 5)	3.93(1, 6)
502000.	4495000.	317.	1000.40(1,24)	958.73(1,23)	917.07(1,22)	875.40(1,21)	833.73(1,20)
503000.	4495000.	363.	9.35(1, 2)	9.35(1, 3)	9.35(1, 4)	9.35(1, 5)	9.35(1, 6)
504000.	4495000.	364.	2.32(1, 2)	2.32(1, 3)	2.32(1, 4)	2.32(1, 5)	2.32(1, 6)
502000.	4496000.	349.	1.29(1, 1)	1.29(1, 2)	1.29(1, 3)	1.29(1, 4)	1.29(1, 5)
503000.	4496000.	317.	1007.76(1,24)	966.09(1,23)	924.43(1,22)	882.76(1,21)	841.09(1,20)
504000.	4496000.	323.	1.35(1, 2)	1.35(1, 3)	1.35(1, 4)	1.35(1, 5)	1.35(1, 6)
502000.	4497000.	329.	2.35(1, 1)	2.35(1, 2)	2.35(1, 3)	2.35(1, 4)	2.35(1, 5)
503000.	4497000.	347.	5.97(1, 2)	5.97(1, 3)	5.97(1, 4)	5.97(1, 5)	5.97(1, 6)
504000.	4497000.	320.	500.87(1,24)	480.04(1,23)	459.21(1,22)	438.37(1,21)	417.54(1,20)
505167.	4499107.	274.	2892.59(1,24)*	2950.92(1,23)*	2907.47(1,22)	2694.41(1,21)	2596.46(1,20)

* - DENOTES PEAK VALUE

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APPENDIX A

. COMPLETE FORTRAN LISTING FOR THE POSTZ PROGRAM

(UNIVAC Version)

```
      PROGRAM POSTZ
C
C POSTZ - A POST PROCESSOR FOR THE SHORTZ MODEL.  POSTZ WAS WRITTEN
C BY KIRK D. WINGES, TRC ENVIRONMENTAL CONSULTANTS, INC.,
C 15924 22ND AVE. SE, MILL CREEK, WA, 98012 (206) 485-2992
C
C THE SHORTZ MODEL MUST BE RUN FIRST AND THE OPTION SELECTED TO
C WRITE AN OUTPUT TAPE (CARD 1, COLUMN 1 SHOULD BE A "2").
C THE SHORTZ MODEL HAS THE CAPABILITY TO USE A LARGE NUMBER
C OF RECEPTORS.  IF POSTZ IS TO BE USED TO ANALYZE THE OUTPUT
C TAPE FROM A SHORTZ RUN, THE NUMBER OF RECEPTORS MUST BE LIMITED
C TO A TOTAL OF NO MORE THAN 300 (GRID AND DISCRETE RECEPTORS).
C
C THE POSTZ PROGRAM HAS TWO INPUT STREAMS: THE OUTPUT TAPE FROM THE
C SHORTZ MODEL AS NOTED ABOVE, AND A "CARD IMAGE" FILE SPECIFYING
C HOW THE POST PROCESSING IS TO BE ACCOMPLISHED.  THERE ARE MANY
C OPTIONS FOR THE POSTZ ANALYSIS OF AN OUTPUT TAPE.  IN GENERAL,
C THE OPTIONS TO BE USED ARE SPECIFIED WITH A SERIES OF SWITCHES
C ON CARD 2.  THE REMAINING CARDS TO BE READ ARE DETERMINED BY
C WHICH SWITCHES HAVE BEEN SET.  THE FOLLOWING DESCRIPTION IS
C INTENDED TO PROVIDE AN OUTLINE FOR THE PROGRAM OPTIONS AND
C REQUIRED INPUT VARIABLES IN THE CARD IMAGE FILE.
C
C
C     USER'S INSTRUCTIONS FOR CREATING THE CARD IMAGE
C     INPUT FILE
C
C     CARD   CARD
C     GROUP  NO.    PARAMETER  FORMAT   DESCRIPTION
C       1     1     PTITLE      A80      RUN TITLE FOR THE POSTZ RUN,
C                                        DIFFERENT FROM THE RUN TITLE
C                                        FOR THE SHORTZ RUN USED TO
C                                        CREATE THE OUTPUT TAPE
C
C       2     1     ISW(1)      24I2     SWITCH TO DETERMINE IF TIME
C                                        PERIOD OF ANALYSIS IS TO BE
C                                        RESTRICTED. IF =0, USE
C                                        ENTIRE TIME PERIOD ON THE
C                                        OUTPUT TAPE FROM THE SHORTZ
C                                        RUN. IF =1, INCLUDE CARD
C                                        GROUP 4 TO SPECIFY TIME
C                                        PERIOD RESTRICTION
C
C                   ISW(2)               SWITCH TO DETERMINE IF
C                                        ANALYSIS IS TO BE RESTRICTED
C                                        TO CERTAIN RECEPTORS.  IF
C                                        =0, ALL RECEPTORS WILL BE
C                                        INCLUDED IN THE POSTZ RUN.
C                                        IF =1, RESTRICT ANALYSIS
C                                        ONLY TO THOSE RECEPTORS
C                                        SPECIFIED IN CARD GROUP 5.
C
C                   ISW(3)               SWITCH TO DETERMINE IF THE
C                                        ANALYSIS IS TO BE RESTRICTED
C                                        TO ONLY CERTAIN SOURCES.  IF
```

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C                                  =0, ALL SOURCES WILL BE
C                                  INCLUDED.  IF =1, RESTRICT
C                                  ANALYSIS TO ONLY THOSE
C                                  SOURCES SPECIFIED IN CARD
C                                  GROUP 6.
C
C     ISW(4)                       SWITCH TO DETERMINE IF
C                                  BACKGROUND CONCENTRATIONS
C                                  ARE TO BE ADDED TO THE
C                                  SHORTZ MODEL RESULTS.   IF
C                                  =0, NO BACKGROUND
C                                  CONCENTRATIONS ARE INCLUDED;
C                                  IF =1, UNIFORM BACKGROUND IS
C                                  TO BE ADDED TO ALL RECEPTORS
C                                  AS SPECIFIED IN CARD GROUP
C                                  7; IF =2, SEPARATE
C                                  BACKGROUND IS TO BE ADDED TO
C                                  EACH RECEPTOR AS SPECIFIED
C                                  IN CARD GROUP 7.
C
C     ISW(5)                       SWITCH TO DETERMINE IF
C                                  CONTRIBUTIONS FROM
C                                  PARTICULAR SOURCES ARE TO BE
C                                  SCALED.  IF =0, NO SOURCE
C                                  SCALING IS DONE; IF =1,
C                                  SCALING WILL BE PERFORMED
C                                  FOR SOURCES AND VALUES
C                                  SPECIFIED IN CARD GROUP 8.
C
C     ISW(6)                       SWITCH TO DETERMINE IF A
C                                  HIGH-5 OUTPUT TABLE IS TO BE
C                                  PREPARED FOR 1-HOUR AVERAGE
C                                  CONCENTRATIONS. IF =0, NO
C                                  HIGH-5 TABLE FOR 1-HOUR
C                                  CONCENTRATIONS.  IF =1,
C                                  PREPARE A HIGH-5 TABLE BY
C                                  RECEPTOR FOR 1 HOUR AVERAGE
C                                  CONCENTRATIONS.
C
C     ISW(7)                       SWITCH TO DETERMINE IF A
C                                  TOP-50 TABLE IS TO BE
C                                  PREPARED FOR 1-HOUR AVERAGE
C                                  CONCENTRATIONS.  IF =0, NO
C                                  TOP-50 TABLE FOR 1-HOUR
C                                  CONCENTRATIONS.  IF =1,
C                                  PREPARE A TOP-50 TABLE FOR
C                                  1-HOUR AVERAGE
C                                  CONCENTRATIONS.
C
C     ISW(8)                       SWITCH TO DETERMINE IF AN
C                                  EXCEEDANCE TABLE IS TO BE
C                                  PREPARED FOR 1-HOUR AVERAGE
C                                  CONCENTRATIONS.  IF =0, NO
C                                  EXCEEDANCE TABLE FOR 1-HOUR
C                                  CONCENTRATIONS.  IF =1,
```

```
C                                  PREPARE AN EXCEEDANCE TABLE
C                                  FOR 1-HOUR AVERAGE
C                                  CONCENTRATIONS.  EXCEEDANCE
C                                  VALUE SPECIFIED IN CARD GROUP
C                                  11 (ONEEX).
C
C     ISW(9)                       SWITCH TO DETERMINE IF A
C                                  HIGH-5 OUTPUT TABLE IS TO BE
C                                  PREPARED FOR 3-HOUR AVERAGE
C                                  CONCENTRATIONS. IF =0, NO
C                                  HIGH-5 TABLE FOR 3-HOUR
C                                  CONCENTRATIONS.  IF =1,
C                                  PREPARE A HIGH-5 TABLE BY
C                                  RECEPTOR FOR 3 HOUR AVERAGE
C                                  CONCENTRATIONS.
C
C     ISW(10)                      SWITCH TO DETERMINE IF A
C                                  TOP-50 TABLE IS TO BE
C                                  PREPARED FOR 3-HOUR AVERAGE
C                                  CONCENTRATIONS.  IF =0, NO
C                                  TOP-50 TABLE FOR 3-HOUR
C                                  CONCENTRATIONS.  IF =1,
C                                  PREPARE A TOP-50 TABLE FOR
C                                  3-HOUR AVERAGE
C                                  CONCENTRATIONS.
C
C     ISW(11)                      SWITCH TO DETERMINE IF AN
C                                  EXCEEDANCE TABLE IS TO BE
C                                  PREPARED FOR 3-HOUR AVERAGE
C                                  CONCENTRATIONS.  IF =0, NO
C                                  EXCEEDANCE TABLE FOR 3-HOUR
C                                  CONCENTRATIONS.  IF =1,
C                                  PREPARE AN EXCEEDANCE TABLE
C                                  FOR 3-HOUR AVERAGE
C                                  CONCENTRATIONS.  EXCEEDANCE
C                                  VALUE SPECIFIED IN CARD GROUP
C                                  11 (THREX).
C
C     ISW(12)                      SWITCH TO DETERMINE IF A
C                                  HIGH-5 OUTPUT TABLE IS TO BE
C                                  PREPARED FOR 8-HOUR AVERAGE
C                                  CONCENTRATIONS. IF =0, NO
C                                  HIGH-5 TABLE FOR 8-HOUR
C                                  CONCENTRATIONS.  IF =1,
C                                  PREPARE A HIGH-5 TABLE BY
C                                  RECEPTOR FOR 8 HOUR AVERAGE
C                                  CONCENTRATIONS.
C
C     ISW(13)                      SWITCH TO DETERMINE IF A
C                                  TOP-50 TABLE IS TO BE
C                                  PREPARED FOR 8-HOUR AVERAGE
C                                  CONCENTRATIONS.  IF =0, NO
C                                  TOP-50 TABLE FOR 8-HOUR
C                                  CONCENTRATIONS.  IF =1,
C                                  PREPARE A TOP-50 TABLE FOR
```

```
C                                  8-HOUR AVERAGE
C                                  CONCENTRATIONS.
C
C     ISW(14)                      SWITCH TO DETERMINE IF AN
C                                  EXCEEDANCE TABLE IS TO BE
C                                  PREPARED FOR 8-HOUR AVERAGE
C                                  CONCENTRATIONS.  IF =0, NO
C                                  EXCEEDANCE TABLE FOR 8-HOUR
C                                  CONCENTRATIONS.  IF =1,
C                                  PREPARE AN EXCEEDANCE TABLE
C                                  FOR 8-HOUR AVERAGE
C                                  CONCENTRATIONS.  EXCEEDANCE
C                                  VALUE SPECIFIED IN CARD GROUP
C                                  11 (EIGEX).
C
C     ISW(15)                      SWITCH TO DETERMINE IF A
C                                  HIGH-5 OUTPUT TABLE IS TO BE
C                                  PREPARED FOR 24-HOUR AVERAGE
C                                  CONCENTRATIONS. IF =0, NO
C                                  HIGH-5 TABLE FOR 24-HOUR
C                                  CONCENTRATIONS.  IF =1,
C                                  PREPARE A HIGH-5 TABLE BY
C                                  RECEPTOR FOR 24 HOUR AVERAGE
C                                  CONCENTRATIONS.
C
C     ISW(16)                      SWITCH TO DETERMINE IF A
C                                  TOP-50 TABLE IS TO BE
C                                  PREPARED FOR 24-HOUR AVERAGE
C                                  CONCENTRATIONS.  IF =0, NO
C                                  TOP-50 TABLE FOR 24-HOUR
C                                  CONCENTRATIONS.  IF =1,
C                                  PREPARE A TOP-50 TABLE FOR
C                                  24-HOUR AVERAGE
C                                  CONCENTRATIONS.
C
C     ISW(17)                      SWITCH TO DETERMINE IF AN
C                                  EXCEEDANCE TABLE IS TO BE
C                                  PREPARED FOR 24-HOUR AVERAGE
C                                  CONCENTRATIONS.  IF =0, NO
C                                  EXCEEDANCE TABLE FOR 24-HOUR
C                                  CONCENTRATIONS.  IF =1,
C                                  PREPARE AN EXCEEDANCE TABLE
C                                  FOR 24-HOUR AVERAGE
C                                  CONCENTRATIONS.  EXCEEDANCE
C                                  VALUE SPECIFIED IN CARD GROUP
C                                  11 (TWYEX).
C
C     ISW(18)                      SWITCH TO DETERMINE IF A
C                                  HIGH-5 OUTPUT TABLE IS TO BE
C                                  PREPARED FOR ANNUAL AVERAGE
C                                  CONCENTRATIONS. IF =0, NO
C                                  HIGH-5 TABLE FOR ANNUAL
C                                  CONCENTRATIONS.  IF =1,
C                                  PREPARE A HIGH-5 TABLE BY
C                                  RECEPTOR FOR ANNUAL AVERAGE
```

	CONCENTRATIONS. MUST INPUT NUMBER OF DAYS PER YEAR IN CARD GROUP 9.
ISW(19)	SWITCH TO DETERMINE IF A TOP-50 TABLE IS TO BE PREPARED FOR ANNUAL AVERAGE CONCENTRATIONS. IF =0, NO TOP-50 TABLE FOR ANNUAL CONCENTRATIONS. IF =1, PREPARE A TOP-50 TABLE FOR ANNUAL AVERAGE CONCENTRATIONS.
ISW(20)	SWITCH TO DETERMINE IF AN EXCEEDANCE TABLE IS TO BE PREPARED FOR ANNUAL AVERAGE CONCENTRATIONS. IF =0, NO EXCEEDANCE TABLE FOR ANNUAL CONCENTRATIONS. IF =1, PREPARE AN EXCEEDANCE TABLE FOR ANNUAL AVERAGE CONCENTRATIONS. EXCEEDANCE VALUE SPECIFIED IN CARD GROUP 11 (ANNEX).
ISW(21)	SWITCH TO DETERMINE IF A HIGH-5 OUTPUT TABLE IS TO BE PREPARED FOR USER SPECIFIED AVERAGE CONCENTRATIONS. IF =0, NO HIGH-5 TABLE FOR USER SPECIFIED CONCENTRATIONS. IF =1, PREPARE A HIGH-5 TABLE BY RECEPTOR FOR USER SPECIFIED AVERAGE CONCENTRATIONS.
ISW(22)	SWITCH TO DETERMINE IF A TOP-50 TABLE IS TO BE PREPARED FOR USER SPECIFIED AVERAGE CONCENTRATIONS. IF =0, NO TOP-50 TABLE FOR USER SPECIFIED CONCENTRATIONS. IF =1, PREPARE A TOP-50 TABLE FOR USER SPECIFIED AVERAGE CONCENTRATIONS.
ISW(23)	SWITCH TO DETERMINE IF AN EXCEEDANCE TABLE IS TO BE PREPARED FOR USER SPECIFIED AVERAGE CONCENTRATIONS. IF =0, NO EXCEEDANCE TABLE FOR USER SPECIFIED CONCENTRATIONS. IF =1, PREPARE AN EXCEEDANCE TABLE

```
C                                        FOR USER SPECIFIED AVERAGE
C                                        CONCENTRATIONS.  EXCEEDANCE
C                                        VALUE SPECIFIED IN CARD GROUP
C                                        11 (OTHEX).
C
C                  ISW(24)               SWITCH TO DETERMINE WHETHER
C                                        BLOCK AVERAGES OR RUNNING
C                                        AVERAGES ARE COMPUTED IN ALL
C                                        ANALYSES.  IF =0, THEN BLOCK
C                                        AVERAGES ARE COMPUTED.  IF
C                                        =1, THEN RUNNING AVERAGES
C                                        ARE COMPUTED.
C
C                  ISW(25)               SWITCH TO DETERMINE IF EPA
C                                        CALMS POLICY IS TO BE
C                                        IMPLEMENTED.  IF =0, CALMS
C                                        POLICY IS NOT IMPLEMENTED, IF
C                                        =1, CALMS POLICY IS
C                                        IMPLEMENTED.
C
C      3     1     JULST        I5       JULIAN DAY FOR THE START OF
C                                        THE DATA ON THE TAPE FROM
C                                        THE SHORTZ RUN.
C
C                  IYRI5                 YEAR FOR THE START OF THE
C                                        DATA ON THE TAPE FROM THE
C                                        SHORTZ RUN.  IT CAN EITHER
C                                        BE OF THE FORM 1986 OR OF
C                                        THE FORM 86 -- THE PROGRAM
C                                        WILL USE EITHER.
C
C      4     1     [THIS CARD IS ONLY READ IF ISW(1)=1]
C                  IDYST        I5       THE JULIAN DAY FOR THE START
C                                        OF THE ANALYSIS.
C
C                  IYRST        I5       THE YEAR FOR THE START OF
C                                        THE ANALYSIS.
C
C                  IDYEND       I5       THE JULIAN DAY FOR THE END
C                                        OF THE ANALYSIS.
C
C                  IYREND       I5       THE YEAR FOR THE END OF THE
C                                        ANALYSIS.
C
C      5   [THIS CARD GROUP IS ONLY READ IF ISW(2)=1]
C            1     NXINCL       I5       THE NUMBER OF X GRID POINTS
C                                        TO INCLUDED IN THE ANALYSIS.
C
C            2     [THIS CARD IS NOT READ IF NXINCL=0]
C                  [THIS CARD CAN BE REPEATED AS OFTEN AS NECESSARY
C                  TO INCLUDE ALL THE X GRID POINTS]
C                  XX           8F10.0   THE X GRID POINTS TO INCLUDE
C                                        IN THE ANALYSIS.  NOTE, EACH
C                                        X VALUE TO BE USED MUST BE
C                                        SPECIFIED HERE.  IT IS NOT
```

```
                                        POSSIBLE TO SPECIFY THE
                                        STARTING X VALUE AND THE
                                        INCREMENT FOR OTHER VALUES
                                        AS IT IS IN SHORTZ.

      3     [THIS CARD IS NOT READ IF NXINCL=0]
            NYINCL       8F10.0   THE NUMBER OF Y GRID POINTS
                                  TO INCLUDE IN THE ANALYSIS.

      4     [THIS CARD IS NOT READ IF NXINCL=0]
            [THIS CARD CAN BE REPEATED AS OFTEN AS NECESSARY
            TO INCLUDE ALL THE Y GRID POINTS]
            YY           8F10.0   THE Y GRID POINTS TO BE
                                  INCLUDED IN THE ANALYSIS.
                                  (SEE NOTE ON FORMAT FOR X
                                  GRID POINTS ABOVE).

      5     NXYINC       I5       THE NUMBER OF DISCRETE
                                  RECEPTORS TO INCLUDE IN THE
                                  ANALYSIS.

      6     [THIS CARD IS NOT READ IF NXYINC=0]
            [THIS CARD CAN BE REPEATED AS OFTEN AS NECESSARY
            TO INCLUDE ALL THE DISCRETE RECEPTORS]
            XDISCR       8F10.0   THE X VALUES FOR THE
                                  DISCRETE RECEPTORS.

      7     [THIS CARD IS NOT READ IF NXYINC=0]
            [THIS CARD CAN BE REPEATED AS OFTEN AS NECESSARY
            TO INCLUDE ALL THE DISCRETE RECEPTORS]
            YDISCR       8F10.0   THE Y VALUES FOR THE
                                  DISCRETE RECEPTORS.

6     [THIS CARD GROUP IS ONLY READ IF ISW(3)=1]
      1     NSELIM       I5       THE NUMBER OF SOURCES TO
                                  INCLUDE IN THE RUN

      2     [THIS CARD IS REPEATED NSELIM TIMES]
            K            I5       THE SOURCE IDENTIFICATION
                                  NUMBER OF THE SOURCE TO BE
                                  INCLUDED IN THE RUN.

7     [THIS CARD GROUP IS NOT READ IF ISW(4)=0]

   IF ISW(4)=1 THE FOLLOWING FORMAT APPLIES
      1     BACK         F10.0    THE UNIFORM BACKGROUND
                                  CONCENTRATION TO APPLY TO
                                  ALL RECEPTORS.

   IF ISW(4)=2 THE FOLLOWING FORMAT APPLIES
      1     NUMDIS       I5       THE NUMBER OF RECEPTORS FOR
                                  WHICH A BACKGROUND VALUE IS
                                  TO BE SPECIFIED

      2     [THIS CARD IS REPEATED NUMDIS TIMES]
```

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C                   X1          F10.0    THE X-COORDINATE OF THE
C                                        RECEPTOR FOR BACKGROUND
C                                        SPECIFICATION
C
C                   Y1          F10.0    THE Y-COORDINATE OF THE
C                                        RECEPTOR FOR BACKGROUND
C                                        SPECIFICATION
C
C                   VAL         F10.0    THE BACKGROUND CONCENTRATION
C                                        TO USE FOR THE IDENTIFIED
C                                        RECEPTOR.
C
C       8     [THIS CARD GROUP IS NOT READ IF ISW(5)=0]
C             1     NSCALE      I5       THE NUMBER OF SOURCES TO
C                                        SCALE
C
C             2     [THIS CARD IS REPEATED NSCALE TIMES]
C                   ISCALE      I5       THE SOURCE IDENTIFICATION
C                                        NUMBER OF THE SOURCE TO BE
C                                        SCALED.
C
C                   SCALE       F10.0    THE SCALING VALUE
C
C       9     [THIS CARD GROUP IS ONLY READ IF ISW(18), ISW(19) OR
C             ISW(20) =1]
C             1     NDYYR       I5       THE NUMBER OF DAYS PER YEAR.
C                                        (NOTE THIS VALUE CAN BE ANY
C                                        DESIRED NUMBER LESS THAN
C                                        366.  FOR EXAMPLE, IF THE
C                                        USER DESIRED A 30 DAY
C                                        AVERAGE VALUE, THE ANNUAL
C                                        CAN BE SET TO 30 DAYS WITH
C                                        THIS CARD.)
C
C      10     [THIS CARD GROUP IS ONLY READ IF ISW(21), ISW(22) OR
C             ISW(23) =1]
C             1     IOTHER      I5       THE AVERAGING TIME TO BE
C                                        SPECIFIED BY THE USER.
C                                        (NUMBER OF HOURS)
C
C      11     1     [THIS CARD IS NOT READ IF ISW(8)=0]
C                   ONEEX       F10.0    THE EXCEEDANCE VALUE FOR 1-
C                                        HOUR CONCENTRATIONS
C
C             2     [THIS CARD IS NOT READ IF ISW(11)=0]
C                   THREX       F10.0    THE EXCEEDANCE VALUE FOR 3-
C                                        HOUR CONCENTRATIONS
C
C             3     [THIS CARD IS NOT READ IF ISW(14)=0]
C                   EIGEX       F10.0    THE EXCEEDANCE VALUE FOR 8-
C                                        HOUR CONCENTRATIONS
C
C           4       [THIS CARD IS NOT READ IF ISW(17)=0]
C                   TWYEX       F10.0    THE EXCEEDANCE VALUE FOR 24-
C                                        HOUR CONCENTRATIONS
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C
C              5      [THIS CARD IS NOT READ IF ISW(20)=0]
C                     ANNEX       F10.0    THE EXCEEDANCE VALUE FOR
C                                          ANNUAL CONCENTRATIONS
C
C              6      [THIS CARD IS NOT READ IF ISW(23)=0]
C                     OTHEX       F10.0    THE EXCEEDANCE VALUE FOR
C                                          USER SPECIFIED AVERAGE
C                                          CONCENTRATIONS
C
C

      INTEGER TITLE,TYPE,HOUR,DATS
      COMMON /DIM/ NSOURC,NGROUP,NXPNTS,NYPNTS,NXWYPT,NHOURS,NDAYS
     1,IOVRSN
      COMMON /IO/ NOGO,IT1REC,IT2REC,NINTP,NOTTP,NINFL(3),NOTFL(3)
      COMMON /FP1/ ROTATE,TK,G,ZR,HA,GAMMA1,GAMMA2,XRY,DECAY
     1,UTMX,UTMY
      COMMON /MET/ THETA,UBAR,HM,TA,DPDZ,ISTBLE,P,SIGEPU,SIGAPU,SIGEPL,
     1SIGAPL,ALPHA,HOUR,NUMSQB(300),QB(300),TSB(300),VOLB(300)
      COMMON /SOR/ NUMSQ(300),TYPE(300),Q(300),DX(300),DY(300),H(300),
     1HS(300),TS(300),VOL(300),DTH(300),RDS(300),NS(300),VS(10,300),
     2FREQ(10,300),JFLG(300),H10(300),H10SQ(300),VSQ(300),W(300)
     3,IFTAP(300),CHGQ(300)
      COMMON /RST/ ISW(20),TITLE(20),KUNR(6),KFNR(3),DD1(3),I3,DATS(2),
     1IH,IB,IPRT(100),NLINES,KSW,NGROPS,IHOUR(1464),MUNT(4),ITABLE,IPAGE
     2,ND,LINE,IPC,IBLNK
      COMMON /FILES/ IUNT,JUNT
      DIMENSION X(400),Y(400),XDISC(400),YDISC(400),ZZ(400)
      EQUIVALENCE (NSOURC,DMYNSO),(ISW(1),DMYISW),(NUMSQ(1),DMYNSQ)
      IUNT=5
      JUNT=6
C WRITE THE OUTPUT HEADER
      WRITE(JUNT,9005)
 9005 FORMAT('1',40X,'  POSTZ - VERSION 1.0',/,
     1            40X,'A POST PROCESSOR FOR THE',/,
     2            40X,'SHORTZ AIR QUALITY MODEL',/,
     3            40X,'      JULY, 1986')
C THE FOLLOWING STATEMENTS READ IN THE MAJOR "FIXED" DATA FROM
C THE SHORTZ OUTPUT TAPE.  THE VARIABLES, SUCH AS HOURLY CONCEN-
C TRATIONS ARE READ IN SUBROUTINE SEQANL.
      CALL INPOUP (-1,DMYNSO,8)
      CALL INPOUP (-1,DMYISW,49)
C NXPNTS IS THE NUMBER OF X GRID POINTS, NYPNTS IS THE NUMBER OF
C Y GRID POINTS, NXWYPT IS THE NUMBER OF DISCRETE RECEPTORS.
C NSOURC IS THE NUMBER OF SOURCES, NHOURS IS THE NUMBER OF HOURS
C PER DAY OF METEOROLOGICAL DATA, NDAYS IS THE NUMBER OF DAYS OF
C METEOROLOGICAL DATA IN THE SHORTZ RUN.
      J1=NXPNTS+NYPNTS+2*NXWYPT
      CALL INPOUP (1,ZZ,J1)
      IF(NXPNTS.EQ.0.OR.NYPNTS.EQ.0) GOTO 10
C THE FOLLOWING ROUTINES STORE THE RECPTOR COORDINATES IN THE X ANY Y
C ARRAYS.  DISCRETE COORDINATES ARE STORED IN XDISC AND YDISC ARRAYS.
      DO 11 I=1,NXPNTS
      X(I)=ZZ(I)
```

```
 11   CONTINUE
      DO 12 I=1,NYPNTS
      Y(I)=ZZ(NXPNTS+I)
 12   CONTINUE
 10   IF(NXWYPT.EQ.0) GOTO 13
      DO 14 I=1,NXWYPT
      XDISC(I)=ZZ(NXPNTS+NYPNTS+I)
      YDISC(I)=ZZ(NXPNTS+NYPNTS+NXWYPT+I)
 14   CONTINUE
C NXXYY IS THE TOTAL NUMBER OF RECEPTOR POINTS
 13   NXXYY=NXPNTS*NYPNTS+NXWYPT
      CALL INPOUP(1,ZZ,NXXYY)
C NIJ IS THE NUMBER OF GRID RECEPTOR POINTS
      NIJ=NXPNTS*NYPNTS
      CALL INPOUP(1,ROTATE,11)
      CALL INPOUP(1,DMYNSQ,33*300)
      CALL SEQANL(NSOURC,NXPNTS,NYPNTS,NXWYPT,NXXYY,X,Y,XDISC,YDISC,
     1ZZ,TITLE,NUMSQ,NHOURS,NDAYS,IUNT,JUNT,NIJ)
      WRITE(JUNT,9015)
 9015 FORMAT('1')
      END
```

```
      SUBROUTINE SEQANL(NSOURC,NXPNTS,NYPNTS,NXWYPT,NXXYY,X,Y,XDISC,
     1YDISC,ZZ,TITLE,NUMSQ,NHOURS,NDAYS,IUNT,JUNT,NIJ)
C
C SUBROUTINE SEQANL -- PART OF POSTZ
C THIS SUBROUTINE IS THE MAJOR PORTION OF THE POSTZ PROGRAM.  ALL
C THE INPUT AND OUTPUT IS MANAGED FROM THIS ROUTINE.  SUBROUTINE
C SORT IS THE MAJOR ANALYTICAL TOOL, WHILE SEVERAL ROUTINES ARE
C CALLED TO WRITE OUTPUT TABLES
C
      INTEGER HOUR,PGCT,PTITLE(20),TITLE(20)
      COMMON ONE(300,5),
     *IONEDY(300,5),IEIGSK(8),ITWYSK(24),
     2IONETM(300,5),ONE50(50),ION50D(50),ION50T(50),ION50R(50),
     3ONEE(100),IONED(100),IONET(100),IONER(100),THR(300,5),
     4ITHRDY(300,5),ITHRTM(300,5),THR50(50),ITH50D(50),ITH50T(50),
     5ITH50R(50),THRE(100),ITHED(100),ITHET(100),ITHER(100),
     6EIG(300,5),IEIGDY(300,5),IEIGTM(300,5),EIG50(50),IEI50D(50),
     7IEI50T(50),IEI50R(50),EIGE(100),IEIED(100),IEIET(100),IEIER(100),
     8TWY(300,5),ITWYDY(300,5),ITWYTM(300,5),TWY50(50),ITW50D(50),
     9ITW50T(50),ITW50R(50),TWYE(100),ITWED(100),ITWET(100),ITWER(100),
     AANN(300,5),IANNDY(300,5),IANNTM(300,5),ANN50(50),IAN50D(50),
     BIAN50T(50),IAN50R(50),ANNE(100),IANED(100),IANET(100),IANER(100),
     COTH(300,5),IOTHDY(300,5),IOTHTM(300,5),OTH50(50),IOT50D(50),
     DIOT50T(50),IOT50R(50),OTHE(100),IOTED(100),IOTET(100),IOTER(100),
     ETHRC(300),ANNC(300),
     FEIGC(300),TWYC(300),OTHC(300),ISW(25),IELIM(300),XDISCR(300),
     GYDISCR(300),ISELIM(300),BCKG(300),SCLE(300),CON(300),CONT(300),
     HONEC(300),BACKOT(300)
      COMMON /MET/ THETA,UBAR,HM,TA,DPDZ,ISTBLE,P,SIGEPU,SIGAPU,SIGEPL,
     1SIGAPL,ALPHA,HOUR,NUMSQB(300),QB(300),TSB(300),VOLB(300)
      DIMENSION X(300),Y(300),XDISC(300),YDISC(300),ZZ(300),NUMSQ(300),
     1XX(300),YY(300),ISHOLD(8),HOLD(300,24)
      DATA HOLD/7200*0./
C CLEAR THE SCLE ARRAY USED TO SCALE CONCENTRATIONS FOR A PARTICULAR
C SOURCE
      DO 7 I=1,NSOURC
      SCLE(I)=1.
 7    CONTINUE
      PGCT=1
      LNCT=4
C WRITE TITLE FOR OUTPUT
      WRITE(JUNT,9020) PGCT
 9020 FORMAT(1X,'1',105X,'POSTZ - PAGE NO. ',I3,///)
      WRITE(JUNT,9021)
 9021 FORMAT(43X,'POSTZ - A POST PROCESSOR FOR THE SHORTZ MODEL',/)
C READ THE TITLE CARD FOR THE POSTZ RUN
      READ(IUNT,9006) (PTITLE(J),J=1,20)
 9006 FORMAT(20A4)
C READ THE SWITCHES
      READ(IUNT,9007) (ISW(I),I=1,25)
 9007 FORMAT(25I2)
C READ THE JULIAN DAY (JULST) AND THE YEAR FOR THE START OF THE
C SHORTZ RUN METEOROLOGICAL DATA
      READ(IUNT,9008) JULST,IYR
 9008 FORMAT(I5,I5)
```

```
C WRITE THE SWITCH INFORMATION IN THE OUTPUT FILE
      WRITE(JUNT,9022) (PTITLE(I),I=1,20),(TITLE(I),I=1,20),
     1(ISW(J),J=1,11)
 9022 FORMAT(20X,'POSTZ RUN TITLE:    ',20A4,/,20X,'SHORTZ RUN TITLE:  ',
     120A4,//,20X,'ISW(1) RESTRICT TIME LIMITS (1=YES,0=NO)',40X,
     2I1,/,20X,'ISW(2) LIMIT RECEPTORS TO ANALYZE (1=YES,0=NO)',
     334X,I1,/,20X,'ISW(3) LIMIT SOURCES TO ANALYZE (1=YES,0=NO)',
     436X,I1,/,20X,'ISW(4) SPECIFY BACKGROUND CONCENTRATIONS (0=NO,1=UNI
     5FORM,2=BY RECEPTOR)',9X,I1,/,20X,'ISW(5) SCALE CONCENTRATIONS',
     6' FOR SPECIFIC SOURCES (1=YES,0=NO)',19X,I1,//,
     715X,'1-HOUR AVERAGE ANALYSIS:',/,20X,'ISW(6) HIGH-5 TABLE',
     8' PREPARED (1=YES,0=NO)',39X,I1,/,20X,'ISW(7) TOP 50 TABLE',
     9' PREPARED (1=YES,0=NO)',39X,I1,/,20X,'ISW(8) EXCEEDANCE TABLE',
     A' PREPARED (1=YES,0=NO)',35X,I1,//,15X,'3-HOUR AVERAGE ANALYSIS:',
     B/,20X,'ISW(9) HIGH-5 TABLE PREPARED (1=YES,0=NO)',39X,I1,/,20X,
     C'ISW(10) TOP 50 TABLE PREPARED (1=YES,0=NO)',38X,I1,/,20X,
     D'ISW(11) EXCEEDANCE TABLE PREPARED (1=YES,0=NO)',34X,I1,/)
      WRITE(JUNT,9023) (ISW(J),J=12,25)
 9023 FORMAT(15X,'8-HOUR AVERAGE ANALYSIS:',/,20X,
     1'ISW(12) HIGH-5 TABLE PREPARED (1=YES,0=NO)',38X,I1,/,20X,
     2'ISW(13) TOP-50 TABLE PREPARED (1=YES,0=NO)',38X,I1,/,20X,
     3'ISW(14) EXCEEDANCE TABLE PREPARED (1=YES,0=NO)',34X,I1,//,15X,
     4'24-HOUR AVERAGE ANALYSIS:',/,20X,
     5'ISW(15) HIGH-5 TABLE PREPARED (1=YES,0=NO)',38X,I1,/,20X,
     6'ISW(16) TOP-50 TABLE PREPARED (1=YES,0=NO)',38X,I1,/,20X,
     7'ISW(17) EXCEEDANCE TABLE PREPARED (1=YES,0=NO)',34X,I1,//,15X,
     8'ANNUAL AVERAGE ANALYSIS:',/,20X,
     9'ISW(18) HIGH-5 TABLE PREPARED (1=YES,0=NO)',38X,I1,/,20X,
     A'ISW(19) TOP-50 TABLE PREPARED (1=YES,0=NO)',38X,I1,/,20X,
     B'ISW(20) EXCEEDANCE TABLE PREPARED (1=YES,0=NO)',34X,I1,//,15X,
     C'USER-SPECIFIED AVERAGING TIME ANALYSIS',/,20X,
     D'ISW(21) HIGH-5 TABLE PREPARED (1=YES,0=NO)',38X,I1,/,20X,
     E'ISW(22) TOP-50 TABLE PREPARED (1=YES,0=NO)',38X,I1,/,20X,
     F'ISW(23) EXCEEDANCE TABLE PREPARED (1=YES,0=NO)',34X,I1,//,20X,
     G'ISW(24) BLOCK OR RUNNING AVERAGES (0=BLOCK,1-RUNNING)',27X,I1,
     H/,20X,'ISW(25) CALMS POLICY (1=YES,0=NO)',47X,I1)
      IYRST=IYR
      IDYST=JULST
      IYREND=IYR
      IDYEND=JULST+NDAYS-1
 401  ITEST=IYREND/4
      ITEST2=ITEST*4
      IMAX=365
      IF(ITEST.EQ.ITEST2) IMAX=366
      IF(IDYEND.LE.IMAX) GOTO 400
      IYREND=IYREND+1
      IDYEND=IDYEND-IMAX
      GOTO 401
 400  IF(ISW(1).NE.1) GOTO 10
C THIS ROUTINE ALLOWS THE USER TO SELECT A PORTION OF THE TIME
C PERIOD IN THE SEQUETIAL SHORTZ TAPE FOR ANALYSIS.  IT BASICALLY
C RESTRICTS THE ANALYSIS TO A STARTING JULIAN DAY AND YEAR AND AN
C ENDING JULIAN DAY AND YEAR.
      READ(IUNT,9009) IDYST,IYRST,IDYEND,IYREND
 9009 FORMAT(4I5)
```

```
      IF(IYR-IYRST) 1,2,3
 3    IYRST=IYR
 2    IF(JULST.GT.IDYST) IDYST=JULST
 1    IF(IYR-IYREND) 10,5,6
 6    IYREND=IYR
 5    IF(JULST.GT.IDYEND) IDYEND=JULST
 10   WRITE(JUNT,9024) IDYST,IYRST,IDYEND,IYREND
 9024 FORMAT(//,20X,'JULIAN DAY FOR START OF ANALYSIS',46X,I3,/,
     120X,'YEAR FOR START OF ANALYSIS',50X,I5,/,20X,'JULIAN DAY ',
     2'FOR END OF ANALYSIS',48X,I3,/,20X,'YEAR FOR END OF ANALYSIS',
     352X,I5)
      IF(ISW(2).EQ.0) GOTO 20
C THIS ROUTINE ALLOWS THE USER TO RESTICT THE ANALYSIS TO ONLY CERTAIN
C SELECTED RECEPTORS.  AN ARRAY CALLED IELIM IS INITALIZED AT 1 TO
C INDICATE ALL RECEPTORS ARE TO BE ELIMINATED.  FOR THOSE TO BE
C THE ARRAY ELEMENT IS LATER CHANGES TO 0
      DO 11 I=1,NXXYY
      IELIM(I)=1
 11   CONTINUE
      READ(IUNT,9011) NXINCL
C IF THE NUMBER OF X GRID ELEMENTS TO INCLUDE IS 0, THERE ARE NO
C GRID RECEPTORS TO INCLUDE
      IF(NXINCL.EQ.0) GOTO 12
C READ THE X AND Y RECEPTORS TO INCLUDE
      READ(IUNT,9012) (XX(I),I=1,NXINCL)
      READ(IUNT,9011) NYINCL
      READ(IUNT,9012) (YY(I),I=1,NYINCL)
 9011 FORMAT(I5)
C THIS ROUTINE CHECKS TO ENSURE THE RECEPTORS THE USER HAS SPECIFIED
C WERE INDEED IN THE ORIGINAL SHORTZ RUN
      DO 13 II=1,NXINCL
      DO 13 JJ=1,NYINCL
      IGO=0
      DO 14 I=1,NXPNTS
      DO 14 J=1,NYPNTS
      IF(X(I).NE.XX(II).OR.Y(J).NE.YY(JJ)) GOTO 14
      IGO=1
      K=(J-1)*NXPNTS+I
      IELIM(K)=0
      GOTO 13
 14   CONTINUE
      IF(IGO.EQ.0) CALL EROUT(2)
 13   CONTINUE
 12   READ(IUNT,9011) NXYINC
C IF NEITHER GRID NOR DISCRETE RECEPTORS ARE SELECTED, AN ERROR HAS
C DETECTED IN THE INPUT STREAM
      IF(NXINCL.EQ.0.AND.NXYINC.EQ.0) CALL EROUT(1)
      IF(NXYINC.EQ.0) GOTO 25
C THE DISCRETE RECEPTORS ARE READ
      READ(IUNT,9012) (XDISCR(I),I=1,NXYINC)
 9012 FORMAT(8F10.0)
      READ(IUNT,9012) (YDISCR(I),I=1,NXYINC)
C THIS ROUTINE CHECKS TO ENSURE THAT SELECTED DISCRETE RECEPTORS WERE
C INDEED IN THE ORIGINAL SHORTZ RUN
      DO 17 I=1,NXYINC
```

```
      IGO=0
      DO 18 J=1,NXWYPT
      IF(XDISC(J).NE.XDISCR(I).OR.YDISC(J).NE.YDISCR(I)) GOTO 18
      IGO=1
      IELIM(NIJ+J)=0
 18   CONTINUE
      IF(IGO.NE.1) CALL EROUT(3)
 17   CONTINUE
C PGCT IS A PAGE COUNT INDEX USED TO NUMBER PAGES
 25   PGCT=PGCT+1
      WRITE(JUNT,9020) PGCT
      WRITE(JUNT,9025)
 9025 FORMAT(45X,'RESTRICTING ANALYSIS TO CERTAIN RECEPTORS',/,
     148X,'THE FOLLOWING RECEPTORS WERE INCLUDED',//,1X,'---------------
     2------------------------------------------------------------------
     3----------------------------------------')
      NOPNTS=0
      IF(NXPNTS.EQ.0.AND.NYPNTS.EQ.0) GOTO 26
      DO 27 I=1,NYPNTS
      DO 27 J=1,NXPNTS
      K=(I-1)*NXPNTS+J
      IF(IELIM(K).EQ.1) GOTO 27
      NOPNTS=NOPNTS+1
      XX(NOPNTS)=X(J)
      YY(NOPNTS)=Y(I)
 27   CONTINUE
 26   DO 28 I=1,NXWYPT
      K=NIJ+I
      IF(IELIM(K).EQ.1) GOTO 28
      NOPNTS=NOPNTS+1
      XX(NOPNTS)=XDISC(I)
      YY(NOPNTS)=YDISC(I)
 28   CONTINUE
      WRITE(JUNT,9026) (XX(K),YY(K),K=1,NOPNTS)
 9026 FORMAT(10X,'(',F10.0,',',F10.0,')',5X,'(',F10.0,',',F10.0,')',
     15X,'(',F10.0,',',F10.0,')',5X,'(',F10.0,',',F10.0,')')
 20   IF(ISW(3).EQ.0) GOTO 30
C THIS ROUTINE ALLOWS THE USER TO ELIMATE CERTAIN SOURCES FORM
C INCLUSION IN THE POSTZ RUN
C THE PARAMETER NSELIM IS THE NUMBER OF SOURCES TO INCLUDED IN
C THE POSTZ RUN
      READ(IUNT,9011) NSELIM
      DO 21 I=1,NSOURC
      ISELIM(I)=1
 21   CONTINUE
      DO 22 I=1,NSELIM
      READ(IUNT,9011) K
      IGO=0
C THIS ROUTINE CHECKS TO ENSURE THE SOURCE TO BE INCLUDED WAS INDEED
C IN THE ORIGICAL SHORTZ RUN
      DO 23 J=1,NSOURC
      IF(NUMSQ(J).NE.K) GOTO 23
      IGO=1
      ISELIM(J)=0
 23   CONTINUE
```

```
      IF(IGO.EQ.0) CALL EROUT(4)
 22   CONTINUE
      PGCT=PGCT+1
      WRITE(JUNT,9020) PGCT
      WRITE(JUNT,9027)
 9027 FORMAT(41X,'THE ANALYSIS HAS BEEN CONFINED TO CERTAIN SOURCES',/,
     135X,'THE FOLLOWING SOURCES (BY IDENTIFICATION NUMBER) WERE ',
     2'INCLUDED',//,' ----------------------------------------------------
     3-------------------------------------------------------------')
      NOSO=0
      DO 24 I=1,NSOURC
      IF(ISELIM(I).EQ.1) GOTO 24
      NOSO=NOSO+1
      ISHOLD(NOSO)=NUMSQ(I)
      IF(NOSO.LT.8) GOTO 24
      WRITE(JUNT,9028) (ISHOLD(J),J=1,NOSO)
 9028 FORMAT(10X,8(I5,6X))
      NOSO=0
 24   CONTINUE
      WRITE(JUNT,9028) (ISHOLD(J),J=1,NOSO)
 30   IF(ISW(4)-1) 40,31,32
C THIS ROUTINE ALLOW THE SPECIFICATION OF BACKGROUND VALUES TO BE
C ADDED TO THE CONCENTRATIONS ON THE TAPE.  BACKGROUND CAN BE
C SPECIFIED IN TWO WAYS: A UNIFORM BACKGROUND IS USED FOR ALL RECEPTORS
C IN ALL ANALYSES, AND SEPARATE BACKGROUND CONCENTRATIONS ARE USED FOR
C INDIVIDUAL RECEPTOR
 31   READ(IUNT,9013) BACK
 9013 FORMAT(F10.0)
      DO 33 I=1,NXXYY
      BCKG(I)=BACK
 33   CONTINUE
      PGCT=PGCT+1
      WRITE(JUNT,9020) PGCT
      WRITE(JUNT,9029) BACK
 9029 FORMAT(42X,'A UNIFORM BACKGROUND CONCENTRATION OF ',F10.2,/,
     137X,'MICROGRAMS PER CUBIC METER HAS BEEN ADDED TO ALL RECEPTORS')
      GOTO 40
 32   PGCT=PGCT+1
C THIS ROUTINE ALLOW THE DIFFERENT BACKGROUND CONCENTRATIONS TO BE USED
C FOR EACH RECEPTOR
      WRITE(JUNT,9020) PGCT
      WRITE(JUNT,9030)
 9030 FORMAT(43X,'SEPARATE BACKGROUND CONCENTRATIONS HAVE BEEN ',/,
     153X,'SPECIFIED FOR EACH RECEPTOR',/,55X,'(X-COORD,Y-COORD) VALUE',
     2/,' ----------------------------------------------------------------
     3----------------------------------------------------------------
     4')
 34   READ(IUNT,9011) NUMDIS
C THE NUMBER OF RECEPTORS TO HAVE A BACKGROUND SPECIFICATION IS
C READ AS NUMDIS
      IF(NUMDIS) 49,49,46
 45   NBACK=0
      DO 46 I=1,NUMDIS
C THE COORDINATES FOR EACH RECEPTORS TO HAVE A BACKGROUND SPECIFIED
C ARE READ ALONG WITH THE BACKGROUND VALUE
```

```
      READ(IUNT,9012) X1,Y1,VAL
      IGO=0
      DO 35 II=1,NXPNTS
      DO 35 J=1,NYPNTS
      IF(X1.NE.X(II).OR.Y1.NE.Y(J)) GOTO 35
      IGO=1
      K=(J-1)*NXPNTS+II
      NBACK=NBACK+1
C XX, YY AND BACKOT ARE USED STRICTLY FOR OUTPUT
      XX(NBACK)=X(II)
      YY(NBACK)=Y(J)
      BACKOT(NBACK)=VAL
      BCKG(K)=VAL
      GOTO 46
 35   CONTINUE
      DO 47 J=1,NXWYPT
      IF(X1.NE.XDISC(J).OR.Y1.NE.YDISC(J)) GOTO 47
      IGO=1
      K=NIJ+J
      NBACK=NBACK+1
      XX(NBACK)=XDISC(J)
      YY(NBACK)=YDISC(J)
      BACKOT(NBACK)=VAL
      BCKG(K)=VAL
      GOTO 46
 47   CONTINUE
      IF(IGO.EQ.0) CALL EROUT(12)
 46   CONTINUE
 49   NHOLD=0
      IF(NBACK.GT.200) NHOLD=NBACK-200
      NBACK=NBACK-NHOLD
 37   WRITE(JUNT,9031) (XX(I),YY(I),BACKOT(I),I=1,NBACK)
 9031 FORMAT(2X,'(',F9.0,',',F9.0,')',F9.0,2X,'(',F9.0,',',F9.0,')',
     1F9.0,2X,'(',F9.0,',',F9.0,')',F9.0,2X,'(',F9.0,',',F9.0,')',
     2F9.0)
      IF(NHOLD.EQ.0) GOTO 40
      PGCT=PGCT+1
      WRITE(JUNT,9020) PGCT
      NBACK=NBACK+NHOLD
      WRITE(JUNT,9031) (XX(I),YY(I),BACKOT(I),I=201,NBACK)
 40   IF(ISW(5).EQ.0) GOTO 50
C THIS ROUTINE ALLOWS THE CONTRIBUTION FROM ANY INDIVIDUAL SOURCE TO BE
C SCALED BY A PARTICULAR VALUE, SCALE
      READ(IUNT,9011) NSCALE
      DO 41 I=1,NSCALE
      READ(IUNT,9014) ISCALE,SCALE
 9014 FORMAT(I5,F10.0)
      IGO=0
      DO 42 J=1,NSOURC
      IF(NUMSQ(J).NE.ISCALE) GOTO 42
      IGO=1
      SCLE(J)=SCALE
 42   CONTINUE
      IF(IGO.EQ.0) CALL EROUT(5)
 41   CONTINUE
```

```
      PGCT=PGCT+1
      WRITE(JUNT,9020) PGCT
      WRITE(JUNT,9032)
 9032 FORMAT(44X,'THE CONCENTRATIONS FROM CERTAIN SOURCES WERE',/,50X,
     1'SCALED BY THE FOLLOWING AMOUNTS',/,47X,'(IDENTIFICATION NUMBER,SC
     2ALING VALUE)',//,' ------------------------------------------------
     3------------------------------------------------------------')
      WRITE(JUNT,9033) (NUMSQ(I),SCLE(I),I=1,NSOURC)
 9033 FORMAT(5X,'(',I5,',',F7.2,')',5X,'(',I5,',',F7.2,')',
     15X,'(',I5,',',F7.2,')',5X,'(',I5,',',F7.2,')',
     25X,'(',I5,',',F7.2,')',5X,'(',I5,',',F7.2,')')
C
C THE FOLLOWING ROUTINES CHECK TO ENSURE THERE IS ENOUGH MET DATA
C IN THE ORIGINAL SHORTZ RUN TO COMPLETE THE ANLAYSES REQUESTED BY
C THE USER
 50   IF(ISW(9).EQ.0.AND.ISW(10).EQ.0.AND.ISW(11).EQ.0) GOTO 60
      IF(NHOURS.LT.3) CALL EROUT(6)
 60   IF(ISW(12).EQ.0.AND.ISW(13).EQ.0.AND.ISW(14).EQ.0) GOTO 70
      IF(NHOURS.LT.8) CALL EROUT(7)
 70   IF(ISW(15).EQ.0.AND.ISW(16).EQ.0.AND.ISW(17).EQ.0) GOTO 80
      IF(NHOURS.LT.24) CALL EROUT(8)
 80   IF(ISW(18).EQ.0.AND.ISW(19).EQ.0.AND.ISW(20).EQ.0) GOTO 90
C IF AN ANNUAL CONCENTRATION IS TO BE COMPUTED, THIS ROUTINE ASKS
C THE NUMBER OF DAYS PER YEAR IN THE ANNUAL RUN
      READ(IUNT,9011) NDYYR
      NHRYR=NDYYR*24
      IF(NDAYS.LT.NDYYR) CALL EROUT(9)
 90   IF(ISW(21).EQ.0.AND.ISW(22).EQ.0.AND.ISW(23).EQ.0) GOTO 100
C OTHER IS USED WHEN THE USER WANTS TO SPEICFIY AN AVERAGING OTHER
C THAN THE STANDARD VALUES (E.G. 1-HOUR, 3-HOUR, 8-HOUR, 24-HOUR, AND
C ANNUAL.
      READ(IUNT,9011) IOTHER
      IF(NHOURS.LT.IOTHER) CALL EROUT(10)
 100  JDAY=0
      JULD=JULST-1
C IF AN EXCEEDANCE TABLE IS TO BE PREPARED, THE CRITERIA FOR THE
C EXCEEDANCE IS SPECIFIED IN THE NEXT LINES
      IF(ISW(8).EQ.1) READ(IUNT,9012) ONEEX
      IF(ISW(11).EQ.1) READ(IUNT,9012) THREX
      IF(ISW(14).EQ.1) READ(IUNT,9012) EIGEX
      IF(ISW(17).EQ.1) READ(IUNT,9012) TWYEX
      IF(ISW(20).EQ.1) READ(IUNT,9012) ANNEX
      IF(ISW(23).EQ.1) READ(IUNT,9012) OTHEX
C
C MAIN LOOP - OVER THE TOTAL NUMBER OF DAYS
C
      DO 1000 IDAY=1,NDAYS
      JDAY=JDAY+1
      JULD=JULD+1
C TEAT TO DETERMINE IF LEAP YEAR
      ITEST=IYR/4
      IF(ITEST-IYR/4) 110,111,110
 110  IF(JULD.GT.365) GOTO 112
      GOTO 120
 111  IF(JULD.GT.366) GOTO 112
```

```
      GOTO 120
 112  IYR=IYR+1
      JULD=1
C TEST TO DETERMINE IF BEYOND END YEAR OR DAY, OR BEFORE START
C YEAR OR DAY.
 120  IF(IYR-IYREND) 130,121,2000
 121  IF(JULD.GT.IDYEND) GOTO 2000
C
C LOOP OVER NUMBER OF HOURS PER DAY
C

 130  DO 900 IHR=1,NHOURS
C READ THE INPUT TAPE (FROM THE SHORTZ RUN) TO OBTAIN THE MET DATA
      CALL INPOUP(1,THETA,1213)
C ISKIP IS AN PART OF THE CALMS POLICY IMPLEMENTATION
      ISKIP=0
C THE FOLLOWING ARE COUNTERS FOR THE NUMBER OF "VALID" (AS DEFINED
C BY THE CALMS POLICY) AND TOTAL HOURS PROCESSED
      I3CT=I3CT+1
      IF(I3CT.LE.3) GOTO 132
      I3CT=1
 132  I8CT=I8CT+1
      IF(I8CT.GT.8) GOTO 133
      IF(UBAR.GE.1.) I8VAL=I8VAL+1
      GOTO 134
 133  I8CT=1
      I8VAL=0
      IF(UBAR.GE.1.) I8VAL=1
 134  I24CT=I24CT+1
      IF(I24CT.GT.24) GOTO 135
      IF(UBAR.GE.1.) I24VAL=I24VAL+1
      GOTO 136
 135  I24CT=1
      I24VAL=0
      IF(UBAR.GE.1.) I24VAL=1
 136  IANNCT=IANNCT+1
      IF(IANNCT.GT.NHRYR) GOTO 138
      IF(UBAR.GE.1.) IANVAL=IANVAL+1
      GOTO 139
 138  IANNCT=1
      IANVAL=0
      IF(UBAR.GE.1.) IANVAL=1
 139  IOTHCT=IOTHCT+1
      IF(IOTHCT.GT.IOTHER) GOTO 137
      IF(UBAR.GE.1.) IOTVAL=IOTVAL+1
      GOTO 140
 137  IOTHCT=1
      IOTVAL=0
      IF(UBAR.GE.1.) IOTVAL=1
 140  IF(ISW(25).EQ.1.AND.UBAR.LT.1.) ISKIP=1
      DO 151 I=1,NXXYY
      CONT(I)=0.
 151  CONTINUE
C
C LOOP ON SOURCES
```

```
C
      DO 180 ISRC=1,NSOURC
C READ THE CONCENTRATION DATA FROM THE TAPE
      CALL INPOUP(1,CON,NXXYY)
      IF(IYR-IYRST) 180,150,160
 150  IF(JULD.LT.IDYST) GOTO 180
 160  IF(ISELIM(ISRC).EQ.1) GOTO 180
      IF(ISKIP.EQ.1) GOTO 180
      DO 170 I=1,NXXYY
      IF(ISELIM(ISRC).EQ.1) GOTO 170
      IF(IELIM(I).EQ.1) GOTO 170
      CONT(I)=CONT(I)+CON(I)*SCLE(ISRC)
 170  CONTINUE
 180  CONTINUE
      IF(IYR-IYRST) 900,181,182
 181  IF(JULD.LT.IDYST) GOTO 900
 182  IF(ISKIP.EQ.1) GOTO 191
      DO 190 I=1,NXXYY
C CONT IS THE TOTAL CONCENTRATION FROM ALL SOURCES INCLUDING BACKGROUND
      CONT(I)=CONT(I)+BCKG(I)
 190  CONTINUE
C
C THE MAIN LOOP ON RECEPTORS
C
 191  DO 300 IR=1,NXXYY
      IF(IELIM(IR).EQ.1) GOTO 300
      DO 290 I=1,23
      J=25-I
C HOLD IS USED FOR RUNNING AVERAGES.  THE PREVIOUS 24-HOURS OF
C TOTAL CONCENTRATIONS BY RECEPTOR ARE STORED IN HOLD
      HOLD(IR,J)=HOLD(IR,J-1)
 290  CONTINUE
      HOLD(IR,1)=CONT(IR)
C THE SORT SUBROUTINE IS THE MAJOR ANALYSIS TOOL FOR THE POSTZ
C PROGRAM.  FOR EACH AVERAGIN TIME, SORT KEEPS TRACK OF THE
C HIGH-5, TOP-50 AND EXCEEDANCE TABLE INFORMATION.  IN THIS FIRST
C CALL, THE THE HIGH-5 FOR THE 1-HOUR ANALYSIS ARE STORED IN THE
C ARRAY ONE, WHILE THE TOP 50 FOR ALL RECEPTORS ARE STORED IN
C ONE50 AND THE EXCEEDANCE TABEL DATA IS STORED IN ONEE.
C SUBSEQUENT CALLS USE SIMILAR NOMENCLATURE
      CALL SORT(1,ISW(6),ISW(7),ISW(8),CONT,IR,ONEC,HOLD,1,1,JULD,
     1IHR,ONE,IONEDY,IONETM,ONE50,ION50D,ION50T,ION50R,ONEE,IONED,
     2IONET,IONER,ONEEX,ISW(24))
      CALL SORT(3,ISW(9),ISW(10),ISW(11),CONT,IR,THRC,HOLD,I3CT,3,JULD,
     1IHR,THR,ITHRDY,ITHRTM,THR50,ITH50D,ITH50T,ITH50R,THRE,ITHED,
     2ITHET,ITHER,THREX,ISW(24))
      IT=0
C THIS ROUTINE IS PART OF THE CALMS POLICY IMPLEMENTATION
      DO 200 I=1,7
      IEIGSK(I)=IEIGSK(I+1)
      IT=IT+IEIGSK(I)
 200  CONTINUE
      IEIGSK(8)=ISKIP
      IT=8-IT-ISKIP
      IF(IT.LT.6) IT=6
```

```
      CALL SORT(8,ISW(12),ISW(13),ISW(14),CONT,IR,EIGC,HOLD,I8CT,IT,
     1JULD,IHR,EIG,IEIGDY,IEIGTM,EIG50,IEI50D,IEI50T,IEI50R,EIGE,
     2IEIED,IEIET,IEIER,EIGEX,ISW(24))
C THIS ROUTINE IS PART OF THE CALMS POLICY IMPLEMENTATION
      IT=0
      DO 210 I=1,23
      ITWYSK(I)=ITWYSK(I+1)
      IT=IT+ITWYSK(I)
 210  CONTINUE
      ITWYSK(24)=ISKIP
      IT=24-IT-ISKIP
      IF(IT.LT.18) IT=18
      CALL SORT(24,ISW(15),ISW(16),ISW(17),CONT,IR,TWYC,HOLD,I24CT,IT,
     1JULD,IHR,TWY,ITWYDY,ITWYTM,TWY50,ITW50D,ITW50T,ITW50R,TWYE,ITWED,
     2ITWET,ITWER,TWYEX,ISW(24))
      IF(ISW(25).NE.1) IANVAL=IANNCT
      CALL SORT(NHRYR,ISW(18),ISW(19),ISW(20),CONT,IR,ANNC,HOLD,IANNCT,
     1IANVAL,JULD,IHR,ANN,IANNDY,IANNTM,ANN50,IAN50D,IAN50T,IAN50R,ANNE,
     2IANED,IANET,IANER,ANNEX,0)
      CALL SORT(IOTHER,ISW(21),ISW(22),ISW(23),CONT,IR,OTHC,HOLD,
     1IOTHCT,IOTHER,JULD,IHR,OTH,IOTRDY,IOTRTM,OTH50,IOT50D,IOT50T,
     2IOT50R,OTHE,IOTED,IOTET,IOTER,OTHEX,ISW(24))
 300  CONTINUE
 900  CONTINUE
 1000 CONTINUE
C
C THE MAJOR LOOPS HAVE BEEN CLOSED, THE NEXT CALLS WRITE THE
C OUTPUT TABLES
C
 2000 IF(ISW(6).EQ.1) CALL H50UT(1,NXPNTS,NYPNTS,NXWYPT,NXXYY,X,Y,
     1XDISC,YDISC,ZZ,PGCT,LNCT,ONE,IONEDY,IONETM,IELIM)
      IF(ISW(7).EQ.1) CALL T50OUT(1,NXPNTS,NYPNTS,X,Y,
     1XDISC,YDISC,ZZ,PGCT,LNCT,ONE50,ION50D,ION50T,ION50R)
      IF(ISW(8).EQ.1) CALL EXOUT(1,NXPNTS,NYPNTS,X,Y,
     1XDISC,YDISC,ZZ,PGCT,LNCT,ONEE,IONED,IONET,IONER,ONEEX)
      IF(ISW(9).EQ.1) CALL H50UT(3,NXPNTS,NYPNTS,NXWYPT,NXXYY,X,Y,
     1XDISC,YDISC,ZZ,PGCT,LNCT,THR,ITHRDY,ITHRTM,IELIM)
      IF(ISW(10).EQ.1) CALL T50OUT(3,NXPNTS,NYPNTS,X,Y,
     1XDISC,YDISC,ZZ,PGCT,LNCT,THR50,ITH50D,ITH50T,ITH50R)
      IF(ISW(11).EQ.1) CALL EXOUT(3,NXPNTS,NYPNTS,X,Y,
     1XDISC,YDISC,ZZ,PGCT,LNCT,THRE,ITHED,ITHET,ITHER,THREX)
      IF(ISW(12).EQ.1) CALL H50UT(8,NXPNTS,NYPNTS,NXWYPT,NXXYY,X,Y,
     1XDISC,YDISC,ZZ,PGCT,LNCT,EIG,IEIGDY,IEIGTM,IELIM)
      IF(ISW(13).EQ.1) CALL T50OUT(8,NXPNTS,NYPNTS,X,Y,
     1XDISC,YDISC,ZZ,PGCT,LNCT,EIG50,IEI50D,IEI50T,IEI50R)
      IF(ISW(14).EQ.1) CALL EXOUT(8,NXPNTS,NYPNTS,X,Y,
     1XDISC,YDISC,ZZ,PGCT,LNCT,EIGE,IEIED,IEIET,IEIER,EIGEX)
      IF(ISW(15).EQ.1) CALL H50UT(24,NXPNTS,NYPNTS,NXWYPT,NXXYY,X,Y,
     1XDISC,YDISC,ZZ,PGCT,LNCT,TWY,ITWYDY,ITWYTM,IELIM)
      IF(ISW(16).EQ.1) CALL T50OUT(24,NXPNTS,NYPNTS,X,Y,
     1XDISC,YDISC,ZZ,PGCT,LNCT,TWY50,ITW50D,ITW50T,ITW50R)
      IF(ISW(17).EQ.1) CALL EXOUT(24,NXPNTS,NYPNTS,X,Y,
     1XDISC,YDISC,ZZ,PGCT,LNCT,TWYE,ITWED,ITWET,ITWER,TWYEX)
      IF(ISW(18).EQ.1) CALL H50UT(NHRYR,NXPNTS,NYPNTS,NXWYPT,NXXYY,X,Y,
     1XDISC,YDISC,ZZ,PGCT,LNCT,ANN,IANNDY,IANNTM,IELIM)
```

```
      IF(ISW(19).EQ.1) CALL T500UT(NHRYR,NXPNTS,NYPNTS,X,Y,
     1XDISC,YDISC,ZZ,PGCT,LNCT,ANN50,IAN50D,IAN50T,IAN50R)
      IF(ISW(20).EQ.1) CALL EXOUT(NHRYR,NXPNTS,NYPNTS,X,Y,
     1XDISC,YDISC,ZZ,PGCT,LNCT,ANNE,IANED,IANET,IANER,ANNEX)
      IF(ISW(21).EQ.1) CALL H5OUT(IOTHER,NXPNTS,NYPNTS,NXWYPT,NXXYY,X,Y,
     1XDISC,YDISC,ZZ,PGCT,LNCT,OTH,IOTHDY,IOTHTM,IELIM)
      IF(ISW(22).EQ.1) CALL T500UT(IOTHER,NXPNTS,NYPNTS,X,
     1Y,XDISC,YDISC,ZZ,PGCT,LNCT,OTH50,IOT50D,IOT50T,IOT50R)
      IF(ISW(23).EQ.1) CALL EXOUT(IOTHER,NXPNTS,NYPNTS,X,Y,
     1XDISC,YDISC,ZZ,PGCT,LNCT,OTHE,IOTED,IOTET,IOTER,OTHEX)
      RETURN
      END
```

```
      SUBROUTINE SORT(N,I1,I2,I3,CONT,IR,CAL,HOLD,ICT,NVAL,JULD,IHR,H5,
     1IH5DY,IH5TM,T50,IT50DY,IT50TM,IR50,E,IEDY,IETM,IRE,EX,IBR)
C
C SUBROUTINE SORT -- PART OF POSTZ
C THIS SUBROUTINE KEEPS TRACK OF TOP 5, TOP 50 AND EXCEEDANCE
C TABLE DATA FOR EACH AVERAGING TIME.  SUBROUTINE SEQANL CALLS SORT
C FOR EACH OF THE AVERAGING TIMES SELECTED BY THE USER
C
      DIMENSION CONT(300),CAL(300),HOLD(300,24),H5(300,5),IH5DY(300,5),
     1IH5TM(300,5),T50(50),IT50DY(50),IT50TM(50),E(100),IEDY(100),
     2IETM(100),IRE(100),IR50(50)
C IF THIS AVERAGING TIME HAS NOT BEEN SELECTED, RETURN TO SEQANL
      IF(I1.EQ.0.AND.I2.EQ.0.AND.I3.EQ.0) RETURN
C TEST TO SEE WHETER RUNNING OR BLOCK AVERAGES
      IF(IBR.EQ.1) GOTO 10
C ROUTINE TO COMPUTE BLOCK AVERAGES
      CAL(IR)=CAL(IR)+CONT(IR)
C FOR BLOCK AVERAGES, RETURN IF THE COUNTER DOES NOT EQUAL THE
C AVERAGING TIME
      IF(ICT.LT.N) RETURN
      GOTO 30
C ROUTINE TO COMPUTE RUNNING AVERAGES
 10   C1=0.
      DO 20 I=1,N
      C1=C1+HOLD(IR,I)
 20   CONTINUE
      C1=C1/NVAL
      GOTO 36
C C1 IS THE AVERAGE CONCENTRAION TO BE EXAMINED TO DETERMINE
C IF IT NEEDS TO BE ADDED TO THE TOP 5 TABLE FOR THE RECEPTOR, OR
C TO THE TOP-50 TABLE FOR ALL RECEPTORS
 30   C1=CAL(IR)/NVAL
 36   IF(I1.NE.1) GOTO 40
C TEST FOR THE HIGH-5 TABLE
      DO 31 I=1,5
      IF(C1.GT.H5(IR,I)) GOTO 32
 31   CONTINUE
      GOTO 40
 32   IF(I.EQ.5) GOTO 33
      DO 34 J=I,4
      K=5+I-J
C MAKE ROOM IN THE ARRAYS FOR VALUE, DAY AND TIME
      H5(IR,K)=H5(IR,K-1)
      IH5DY(IR,K)=IH5DY(IR,K-1)
      IH5TM(IR,K)=IH5TM(IR,K-1)
 34   CONTINUE
 33   H5(IR,I)=C1
      IH5DY(IR,I)=JULD
      IH5TM(IR,I)=IHR
 40   IF(I2.NE.1) GOTO 50
      DO 41 I=1,50
      IF(C1.GT.T50(I)) GOTO 42
 41   CONTINUE
      GOTO 50
C THE ROUTINE FOR THE TOP-50 TABLE
```

```
 42    IF(I.EQ.50) GOTO 43
       DO 44 J=I,49
       K=50+I-J
       T50(K)=T50(K-1)
       IT50DY(K)=IT50DY(K-1)
       IT50TM(K)=IT50TM(K-1)
       IR50(K)=IR50(K-1)
 44    CONTINUE
 43    T50(I)=C1
       IT50DY(I)=JULD
       IT50TM(I)=IHR
       IR50(I)=IR
C THE ROUTINE FOR THE EXCEEDANCE TABLE
 50    IF(I3.NE.1) GOTO 100
       IF(C1.LE.EX) GOTO 100
       DO 51 I=1,100
       IF(C1.GE.E(I)) GOTO 52
 51    CONTINUE
       GOTO 100
 52    IF(I.EQ.100) GOTO 53
       DO 54 J=I,99
       K=100+I-J
       E(K)=E(K-1)
       IEDY(K)=IEDY(K-1)
       IETM(K)=IETM(K-1)
       IRE(K)=IRE(K-1)
 54    CONTINUE
 53    E(I)=C1
       IEDY(I)=JULD
       IETM(I)=IHR
       IRE(I)=IR
 100   IF(IBR.EQ.1) RETURN
       CAL(IR)=0.
       RETURN
       END
```

```
      SUBROUTINE H5OUT(N,NX,NY,NXY,NTOT,X,Y,XD,YD,Z,PGCT,LNCT,
     1H5,IDAY,ITIME,IELIM)
C
C SUBROUTINE H5OUT -- PART OF POSTZ
C THIS SUBROUTINE WRITES THE HIGH-5 OUTPUT TABLE
C
      INTEGER PGCT
      COMMON /FILES/ IUNT,JUNT
      CHARACTER*1 HSTAR(300,2)
      DIMENSION X(300),Y(300),XD(300),YD(300),Z(300),H5(300,5),
     1IDAY(300,5),ITIME(300,5),IELIM(300)
      PK1=0.
      PK2=0.
      IPK1=0
      IPK2=0
      DO 50 I=1,NTOT
      HSTAR(I,1)=' '
      IF(H5(I,1).LT.PK1) GOTO 60
      PK1=H5(I,1)
      IPK1=I
 60   HSTAR(I,2)=' '
      IF(H5(I,2).LT.PK2) GOTO 50
      PK2=H5(I,2)
      IPK2=I
 50   CONTINUE
      HSTAR(IPK1,1)='*'
      HSTAR(IPK2,2)='*'
      PGCT=PGCT+1
      WRITE(JUNT,9000) PGCT
 9000 FORMAT(1X,'1',105X,'POSTZ - PAGE NO. ',I3,///)
      WRITE(JUNT,9001) N
 9001 FORMAT(46X,'HIGH FIVE TABLE FOR ',I5,' HOUR AVERAGES',//,
     12X,'RECEPTOR COORDINATES',42X,'HIGHEST FIVE CONCENTRATIONS',/,
     28X,'METERS',51X,'VALUE(DAY,ENDING HOUR)',//,
     35X,'X',11X,'Y',7X,'ELEV.',9X,'HIGHEST',12X,'2ND HIGH',12X,
     4'3RD HIGH',12X,'4TH HIGH',12X,'5TH HIGH',/,' ----------
     5----------
     6----------')
      LNCT=11
      IF(NX.EQ.0.OR.NY.EQ.0) GOTO 20
      DO 10 I=1,NY
      DO 10 J=1,NX
      K=(I-1)*NX+J
      IF(IELIM(K).EQ.1) GOTO 10
      WRITE(JUNT,9002) X(J),Y(I),Z(K),H5(K,1),IDAY(K,1),ITIME(K,1),
     1HSTAR(K,1),H5(K,2),IDAY(K,2),ITIME(K,2),HSTAR(K,2),
     2(H5(K,L),IDAY(K,L),ITIME(K,L),L=3,5)
 9002 FORMAT(1X,F10.0,2X,F10.0,2X,F6.0,2X,F10.2,'(',I3,',',I2,')',
     1A1,1X,F10.2,'(',I3,',',I2,')',A1,1X,F10.2,'(',I3,',',I2,')',
     22X,F10.2,'(',I3,',',I2,')',2X,F10.2,'(',I3,',',I2,')')
      LNCT=LNCT+1
      IF(LNCT.LT.60) GOTO 10
      PGCT=PGCT+1
      WRITE(JUNT,9000) PGCT
      WRITE(JUNT,9003) N
```

```
9003 FORMAT(46X,'HIGH FIVE TABLE FOR ',I5,' HOUR AVERAGES (CONT.)',//,
     12X,'RECEPTOR COORDINATES',42X,'HIGHEST FIVE CONCENTRATIONS',/,
     28X,'METERS',51X,'VALUE(DAY,ENDING HOUR)',//,
     35X,'X',11X,'Y',7X,'ELEV.',9X,'HIGHEST',12X,'2ND HIGH',12X,
     4'3RD HIGH',12X,'4TH HIGH',12X,'5TH HIGH',/,' ----------
     5----------
     6----------')
      LNCT=11
10    CONTINUE
20    IF(NXY.EQ.0) GOTO 30
      DO 40 I=1,NXY
      K=NX*NY+I
      IF(IELIM(K).EQ.1) GOTO 40
      WRITE(JUNT,9002) XD(I),YD(I),Z(K),H5(K,1),IDAY(K,1),ITIME(K,1),
     1HSTAR(K,1),H5(K,2),IDAY(K,2),ITIME(K,2),HSTAR(K,2),
     2(H5(K,L),IDAY(K,L),ITIME(K,L),L=3,5)
      LNCT=LNCT+1
      IF(LNCT.LT.60) GOTO 40
      PGCT=PGCT+1
      WRITE(JUNT,9000) PGCT
      WRITE(JUNT,9003) N
40    CONTINUE
30    WRITE(JUNT,9004)
9004  FORMAT(/,1X,'* - DENOTES PEAK VALUE')
      RETURN
      END
```

```
      SUBROUTINE T50OUT(N,NX,NY,X,Y,XD,YD,Z,PGCT,LNCT,
     1T50,IDAY,ITIME,IR)
C
C SUBROUTINE T50OUT -- PART OF POSTZ
C THIS SUBROUTINE WRITES THE TOP-50 OUTPUT TABLE
C
      INTEGER PGCT
      COMMON /FILES/ IUNT,JUNT
      DIMENSION X(300),Y(300),XD(300),YD(300),Z(300),T50(50),IDAY(50),
     1ITIME(50),IR(50)
      PGCT=PGCT+1
      WRITE(JUNT,9000) PGCT
 9000 FORMAT(1X,'1',105X,'POSTZ - PAGE NO. ',I3,///)
      WRITE(JUNT,9001) N
 9001 FORMAT(41X,'TOP 50 TABLE FOR ',I5,' HOUR AVERAGE CONCENTRATIONS',
     1//,33X,'RECEPTOR COORDINATES',32X,'ENDING',/,7X,'RANK',8X,'VALUE',
     211X,'X',14X,'Y',11X,'ELEVATION',6X,'DAY',6X,'TIME',/,' -----------
     3------------------------------------------------------------------
     4-------------')
      LNCT=9
      NT=NX*NY
      DO 10 K=1,50
      IF(IDAY(K).EQ.0) RETURN
      IF(IR(K).GT.NT) GOTO 20
      J=(IR(K)-1)/NX+1
      I=IR(K)-(J-1)*NX
      X1=X(I)
      Y1=Y(J)
      GOTO 30
 20   I=IR(K)-NT
      X1=XD(I)
      Y1=YD(I)
 30   WRITE(JUNT,9002) K,T50(K),X1,Y1,Z(IR(K)),IDAY(K),ITIME(K)
 9002 FORMAT(6X,I5,5X,F10.2,5X,F10.0,5X,F10.0,5X,F10.0,5X,I5,5X,I5)
      LNCT=LNCT+1
      IF(LNCT.LE.60) GOTO 10
      PGCT=PGCT+1
      WRITE(JUNT,9000) PGCT
      WRITE(JUNT,9004) N
 9004 FORMAT(41X,'TOP 50 TABLE FOR ',I5,' HOUR AVERAGE CONCENTRATIONS',
     1' (CONT.)',
     2//,33X,'RECEPTOR COORDINATES',32X,'ENDING',/,7X,'RANK',8X,'VALUE',
     311X,'X',14X,'Y',11X,'ELEVATION',6X,'DAY',6X,'TIME',/,' -----------
     4------------------------------------------------------------------
     5-------------')
      LNCT=9
 10   CONTINUE
      RETURN
      END
```

```
      SUBROUTINE EXOUT(N,NX,NY,X,Y,XD,YD,Z,PGCT,LNCT,
     1E,IDAY,ITIME,IR,EX)
C
C SUBROUTINE EXOUT -- PART OF POSTZ
C THIS SUBROUTINE WRITES THE EXCEEDANCE OUTPUT TABLE
C
      INTEGER PGCT
      COMMON /FILES/ IUNT,JUNT
      DIMENSION X(300),Y(300),XD(300),YD(300),Z(300),E(100),IDAY(100),
     1ITIME(100),IR(100)
      PGCT=PGCT+1
      WRITE(JUNT,9000) PGCT
 9000 FORMAT(1X,'1',105X,'POSTZ - PAGE NO. ',I3,///)
      WRITE(JUNT,9001) N,EX
 9001 FORMAT(39X,'EXCEEDANCE TABLE FOR ',I5,' HOUR AVERAGE CONCENTRATION
     1S',/,48X,'VALUES ABOVE ',F10.2,' ARE PRINTED',
     1//,33X,'RECEPTOR COORDINATES',32X,'ENDING',/,7X,'RANK',8X,'VALUE',
     211X,'X',14X,'Y',11X,'ELEVATION',6X,'DAY',6X,'TIME',/,' ----------
     3----------------------------------------------------------------
     4-------------')
      LNCT=10
      NT=NX*NY
      DO 10 K=1,100
      IF(IDAY(K).EQ.0) RETURN
      IF(IR(K).GT.NT) GOTO 20
      J=(IR(K)-1)/NX+1
      I=IR(K)-(J-1)*NX
      X1=X(I)
      Y1=Y(J)
      GOTO 30
 20   I=IR(K)-NT
      X1=XD(I)
      Y1=YD(I)
 30   WRITE(JUNT,9002) K,E(K),X1,Y1,Z(IR(K)),IDAY(K),ITIME(K)
 9002 FORMAT(6X,I5,5X,F10.2,5X,F10.0,5X,F10.0,5X,F10.0,5X,I5,5X,I6)
      LNCT=LNCT+1
      IF(LNCT.LE.60) GOTO 10
      PGCT=PGCT+1
      WRITE(JUNT,9000) PGCT
      WRITE(JUNT,9004) N
 9004 FORMAT(39X,'EXCEEDANCE TABLE FOR ',I5,' HOUR AVERAGE CONCENTRATION
     1S (CONT.)',/,48X,'VALUES ABOVE ',F10.2,' ARE PRINTED',
     1//,33X,'RECEPTOR COORDINATES',32X,'ENDING',/,7X,'RANK',8X,'VALUE',
     211X,'X',14X,'Y',11X,'ELEVATION',6X,'DAY',6X,'TIME',/,' ----------
     3----------------------------------------------------------------
     4-------------')
      LNCT=10
 10   CONTINUE
      RETURN
      END
```

```
      SUBROUTINE EROUT(N)
C
C SUBROUTINE EROUT -- PART OF POSTZ
C THIS SUBROUTINE WRITES THE ERROR MESSAGES
C
      COMMON /FILES/ IUNT,JUNT
      GOTO(1,2,3,4,5,6,7,8,9,10,11,12),N
 1    WRITE(JUNT,9000)
 9000 FORMAT(1X,'**ERROR** NO RECEPTORS HAVE BEEN INCLUDED')
      STOP
 2    WRITE(JUNT,9001)
 9001 FORMAT(1X,'**ERROR** GRID RECEPTOR TO BE INCLUDED IS NOT',/,
     1       1X,'          IN ORIGINAL SHORTZ RUN')
      STOP
 3    WRITE(JUNT,9002)
 9002 FORMAT(1X,'**ERROR** DISCRETE RECEPTOR TO BE INCLUDED IS NOT',/,
     1       1X,'          IN ORIGINAL SHORTZ RUN')
      STOP
 4    WRITE(JUNT,9003)
 9003 FORMAT(1X,'**ERROR** SOURCE NUMBER TO BE INCLUDED IS NOT IN',/,
     1       1X,'          ORIGNIAL SHORTZ RUN')
      STOP
 5    WRITE(JUNT,9004)
 9004 FORMAT(1X,'**ERROR** SOURCE TO BE SCALED IN NOT IN ORIGINAL',/
     1       1X,'          SHORTZ RUN')
      STOP
 6    WRITE(JUNT,9005)
 9005 FORMAT(1X,'**ERROR** THERE ARE TOO FEW HOURS TO COMPUTE A',/,
     1       1X,'          3-HOUR AVERAGE')
      STOP
 7    WRITE(JUNT,9006)
 9006 FORMAT(1X,'**ERROR** THERE ARE TOO FEW HOURS TO COMPUTE AN',/,
     1       1X,'          8-HOUR AVERAGE')
      STOP
 8    WRITE(JUNT,9007)
 9007 FORMAT(1X,'**ERROR** THERE ARE TOO FEW HOURS TO COMPUTE A',/,
     1       1X,'          24-HOUR AVERAGE')
      STOP
 9    WRITE(JUNT,9008)
 9008 FORMAT(1X,'**ERROR** THERE ARE FEWER DAYS IN THE TAPE FILE',/,
     1       1X,'          THAN HAVE BEEN SPECIFIED AS THE NUMBER',/,
     2       1X,'          OF DAYS PER YEAR')
      STOP
 10   WRITE(JUNT,9009)
 9009 FORMAT(1X,'**ERROR** THERE ARE TOO FEW HOURS TO COMPUTE THE',/,
     1       1X,'          USER-SPECIFIED AVERAGING TIME')
      STOP
 11   WRITE(JUNT,9010)
 9010 FORMAT(1X,'**ERROR** THE GRID RECEPTOR FOR WHICH BACKGROUND',/,
     1       1X,'          HAS BEEN SPECIFIED IS NOT IN THE ORIGINAL',/,
     2       1X,'          SHORTZ OUTPUT FILE')
      STOP
 12   WRITE(JUNT,9011)
 9011 FORMAT(1X,'**ERROR** THE DISCRETE RECEPTOR FOR WHICH BACKGROUND',/
     1,      1X,'          HAS BEEN SPEICIFED IS NOT IN THE ORIGINAL',/,
```

```
2       1X,'          SHORTZ OUTPUT FILE')
 STOP
 RETURN
 END
```

```
      SUBROUTINE INPOUP(I,ADR1,ADR2)
C
C  SUBROUTINE INPOUP -- PART OF POSTZ
C  THIS SUBROUTINE IS TAKEN FROM THE SHORTZ MODEL AND IS USED TO
C  READ THE INPUT TAPE.  IT CAN ALSO BE USED TO WRITE THE OUTPUT
C  TAPE, AND THAT IS ONE OF ITS PURPOSES IN THE SHORTZ MODEL
C
      INTEGER TITLE,DATS,ADR2
      DIMENSION XEND(14),ADR1(1),BUFIN(2000),BUFOT(2000,2),IXEND(14)
      COMMON /DIM/ NSOURC,NGROUP,NXPNTS,NYPNTS,NXWYPT,NHOURS,NDAYS
     1,IOVRSN
      COMMON /IO/ NOGO,IT1REC,IT2REC,NINTP,NOTTP,NINFL(3),NOTFL(3)
      COMMON /RST/ ISW(20),TITLE(20),KUNR(6),KFNR(3),DD1(3),I3,DATS(2),
     1IH,IB,IPRT(100),NLINES,KSW,NGROPS,IHOUR(1464),MUNT(4),ITABLE,IPAGE
     2,ND,LINE,IPC,IBLNK
      COMMON /FILES/ IUNT,JUNT
      EQUIVALENCE (XEND,IXEND),(JOVRSN,XOVRSN),(IVSN,XVSN)
      DATA JOVRSN/9903/
      DATA IXEND/0541600000000,13*0/,NI,NO,ISREC/3*1/,IT1REC,IT2REC,NOB,
     1IEND,LSW,IWRD/6*0/,NIB,NWRD/2*2000/,XFT/0.0/
      NOGO = 0
      NINTP=1
      NINFL(1)=2
      IF (I .EQ. 2) GO TO 200
      IF (I .EQ. 3) GO TO 350
      IF (LSW .EQ. 0) GO TO 20
      IT1REC = IT1REC+1
      CALL NTRAN$(NINFL(NI),22,2,ADR2,ADR1,IEOF)
   10 IF (IEOF .GT. 0) GO TO 370
      IF (IEOF .EQ. -1) GO TO 10
      IF (IEOF .EQ. -2) GO TO 180
      GO TO 190
   20 N = 0
   30 N = N+1
      IF (N .GT. ADR2) GO TO 370
   40 NIB = NIB+1
      IF (NIB .GT. IWRD) GO TO 80
      ADR1(N) = BUFIN(NIB)
      IF (I .GT. 0) GO TO 30
      IF (ADR2 .NE. 8) GO TO 50
      IF (N .LT. 8) GO TO 30
      XVSN = ADR1(N)
      IF (ADR1(N) .EQ. XOVRSN) GO TO 30
      IVSN = 9902
      NIB = NIB-1
      IOVRSN = JOVRSN
      GO TO 30
   50 IF (IVSN .EQ. JOVRSN) GO TO 30
      IF (ADR2 .NE. 49.OR.N .LT. 49) GO TO 30
      NIB = NIB-13
      K = 2
      CALL FFDASC(K,TITLE(15),KFNR(1))
      K = 4
      CALL FFDASC(K,TITLE(11),KUNR(1))
      DO 60 K=1,10
```

```
 60 TITLE(21-K) = TITLE(11-K)
    K = 10
    CALL FFDASC(K,TITLE(11),TITLE(1))
    DO 70 K=16,20
 70 TITLE(K) = IBLNK
    GO TO 30
 80 JSW = 1
    IEND = 0
    IT1REC = IT1REC+1
    NIB = 0
 90 CALL NTRAN$(NINFL(NI),22,2,NWRD,BUFIN,IEOF)
100 IF (IEOF .GT. 0) GO TO 130
    IF (IEOF .EQ. -1) GO TO 100
    IF (IEOF .EQ. -2) GO TO 110
    IF (JSW .EQ. 2) GO TO 150
    IF (IEND .EQ. 1) GO TO 160
    WRITE (JUNT,9001) NINFL(NI),IT1REC
    LINE = 200
    GO TO 190
110 IF (JSW .EQ. 2) GO TO 150
    IEND = IEND+1
    IF (IEND .GT. 1) GO TO 120
    IT1REC = IT1REC-1
    IF (IT1REC .LE. 0) GO TO 80
    GO TO 90
120 WRITE (JUNT,9002) NINFL(NI),IT1REC
    LINE = 200
    GO TO 180
130 IWRD = IEOF
    IF (IT1REC .GT. 1) GO TO 140
    IF (IEOF .NE. NWRD) LSW = 1
140 IF (JSW .EQ. 2) GO TO 160
    IF (IEND .EQ. 0) GO TO 40
    IF (BUFIN(1) .NE. XEND(1)) GO TO 160
    IF (IEOF .NE. 14) GO TO 160
    JSW = 2
    GO TO 90
150 CALL NTRAN$(NINFL(NI),22,11,22,22,22)
    NI = NI+1
    IF (NI .GT. NINTP) GO TO 170
    GO TO 80
160 WRITE (JUNT,9003) NINFL(NI),IT1REC
    LINE = LINE+2
    CALL NTRAN$(NINFL(NI),22,7,-1,22,22)
    GO TO 180
170 WRITE (JUNT,9004)
    LINE = LINE+2
    NI = 1
    GO TO 80
180 NOGO = 1
    IT1REC = 0
    LSW = 0
    IWRD = 0
    NIB = 2000
    GO TO 370
```

```
190 NOGO = 2
    IF (IT2REC .LE. 0) GO TO 370
    GO TO 360
200 JSW = 1
    N = 0
210 N = N+1
    IF (N .GT. ADR2) GO TO 370
220 NOB = NOB+1
    IF (NOB .GT. NWRD) GO TO 230
    BUFOT(NOB,2) = ADR1(N)
    GO TO 210
230 IT2REC = IT2REC+1
240 IF (NOB .GT. NWRD) NOB = NWRD
    IF (NOB .LT. 4) NOB = 4
    CALL NTRAN$(NOTFL(NO),22,1,NOB,BUFOT(1,2),IEOF)
250 IF (IEOF .GT. 0) GO TO 330
    IF (IEOF .EQ. -1) GO TO 250
    IF (IEOF .EQ. -2) GO TO 270
260 WRITE (JUNT,9005) NOTFL(NO),IT2REC
    LINE = 200
    GO TO 190
270 IF (NO+1 .LE. NOTTP) GO TO 280
    WRITE (JUNT,9006)
    LINE = LINE+2
    NOGO = 2
    GO TO 370
280 IF (IT2REC .GT. 2) GO TO 310
    WRITE (JUNT,9009) NOTFL(NO)
    LINE = LINE+2
    NO = NO+1
    IF (NO .GT. NOTTP) GO TO 270
    IF (IT2REC .LE. 1) GO TO 300
    CALL NTRAN$(NOTFL(NO),22,1,NWRD,BUFOT(1,1),IEOF)
290 IF (IEOF .GT. 0) GO TO 300
    IF (IEOF .EQ. -1) GO TO 290
    IT2REC = 1
    GO TO 260
300 IT2REC = 0
    GO TO 230
310 CALL NTRAN$(NOTFL(NO),22,7,-2,22,22)
    CALL NTRAN$(NOTFL(NO),22,9,22,22,22)
    CALL NTRAN$(NOTFL(NO),22,1,14,XEND,IEOF)
    CALL NTRAN$(NOTFL(NO),22,9,9,11,22)
    IT2REC = IT2REC-2
    WRITE (JUNT,9007) NOTFL(NO),ISREC,IT2REC
    LINE = LINE+2
    NO = NO+1
    IF (NO .GT. NOTTP) GO TO 270
    XFT = FLOAT(NWRD)*0.005625+0.75
    IT2REC = IT2REC+1
    ISREC = IT2REC
    CALL NTRAN$(NOTFL(NO),22,1,NWRD,BUFOT(1,1),IEOF)
320 IF (IEOF .GT. 0) GO TO 230
    IF (IEOF .EQ. -1) GO TO 320
    GO TO 260
```

```
 330 XFT = XFT+FLOAT(NWRD)*0.005625+0.75
     NOB = 0
     IF (JSW .NE. 1) GO TO 360
     DO 340 J=1,NWRD
 340 BUFOT(J,1) = BUFOT(J,2)
     GO TO 220
 350 JSW = 2
     IF (NOB .GT. 0) GO TO 230
 360 CALL NTRAN$(NOTFL(NO),22,9,9,8,-1)
     XFT = (XFT+12.0)/12.0
     WRITE (JUNT,9008) NOTFL(NO),ISREC,IT2REC,XFT
     LINE = LINE+1
 370 CONTINUE
     RETURN
9001 FORMAT (24H1*** READ ERROR ON UNIT ,I2,11H AT RECORD ,I6/)
9002 FORMAT (25H1*** END OF DATA ON UNIT ,I2,2H, ,I6,13H RECORDS READ/)
9003 FORMAT (25H0*** END OF FILE ON UNIT ,I2,2H, ,I6,13H RECORDS READ/)
9004 FORMAT (86H0*** WARNING - MORE INPUT REELS THAN UNITS ASSIGNED PRO
    1G. GOING TO FIRST UNIT ASSIGNED/)
9005 FORMAT (25H1*** WRITE ERROR ON UNIT ,I2,11H AT RECORD ,I6/)
9006 FORMAT (71H0*** ERROR - MORE OUTPUT REELS REQUIRED THAN UNITS ASSI
    1GNED, PROG STOPS)
9007 FORMAT (32H0*** END OF OUTPUT REEL ON UNIT ,I2,9H RECORDS ,I6,9H T
    1HROUGH ,I6,8H WRITTEN/)
9008 FORMAT (32H *** END OF OUTPUT DATA ON UNIT ,I2,9H RECORDS ,I6,9H T
    1HROUGH ,I6,10H WRITTEN, ,F8.3,18H FEET OF TAPE USED/)
9009 FORMAT (47H0*** WARNING - NOT ENOUGH ROOM ON REEL ON UNIT ,I2,44H
    1PROG. STARTS FIRST OUTPUT REC. ON NEXT REEL/)
     END
```